

# BULLETIN OF THE MISSOURI STATE BOARD OF HEALTH

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**VOL. I.**

**JANUARY, 1904.**

**NO. I**

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## TO THE LOCAL BOARDS OF HEALTH.

To the Local Boards of Health and the Physicians of Missouri, Gentlemen:

At our Annual Meeting in Jefferson City, Mo., January 5th, 1904, the Board decided to issue a Monthly Bulletin for the purpose of bringing together the profession and sanitarians of the state to work in harmony for the good and welfare of the general public. We will try to make this periodical of interest to the profession and will discuss live issues. We desire all local boards of health to feel free to make any suggestions or contributions that they may see proper from their respective districts, concerning contagious and infectious diseases, also suggestions on sanitary conditions, and public and school hygiene. While the space of this pamphlet will not admit of lengthy articles, yet will be glad to publish all articles that will be calculated to benefit the general public.

There are a great many of the Local Boards of Health of the state that are not aware of the fact that we have employed a state Bacteriologist and Pathologist to make scientific investigations of water for domestic use, also to make examinations of disease germs responsible for contagious and infectious diseases, which we wish to place prominently before the profession of this state, that the public may reap the benefit of these scientific investigations. There are many waters that are absolutely unfit for domestic use, and all that will be necessary for Local Boards or physicians of the state is to communicate with our Pathologist, Dr. A. J. Detweiler, Columbia, Mo., and he will give specific instructions as to what will be necessary in furnishing him with specimens of water or diseased specimens to be examined. Knowing very well that we have outbreaks of diphtheria and other diseases of this character throughout the country, it is difficult to make a diagnosis at the beginning of the disease, but with the assistance of a competent Bacteriologist at your command, you not only aid yourself and friends, but also the unfortunate sick. This brief introduction as to the purpose and intent of this Monthly Periodical we present to you, soliciting your hearty approval and co-operation.



**SMALLPOX FROM A LEGAL STANDPOINT.**

To the Local and Municipal Boards of Health of the State of Missouri, Gentlemen:

We wish to congratulate the Local Boards of Health for their efficient work done the past year in the way of controlling and managing smallpox and other contagious diseases. However, there are a few of the Local Boards of Health that have not responded to notices of the above disease and have allowed them to spread in their respective communities until it becomes an expensive proposition to control. The statutory law of this state make its compulsory for every County Board of Health to be organized and ready to meet these demands at all times. These County Boards of Health were established by a special act of the Legislature, which provides for the creation and establishing of a Board of Health in each county in the state of Missouri. Their duties are set forth in the law and they have the same jurisdiction over contagious and infectious diseases and the management of sanitary laws, in the boundaries of their respective counties as the State Board of Health has within the boundaries of the state. It is the legal obligation of these boards that whenever they are informed of the existence of a contagious or infectious disease, that endangers the lives of the citizens of said counties, to at once make proper investigations and take charge of the cases and quarantine them, and use every effort to protect the people from these diseases by simply following out the standard rules and regulations of quarantine as promulgated by the state law. The jurisdiction of these County Boards of Health does not extend into the corporate limits of a city, town or village in their county, but they do have jurisdiction up to the limits.

With regard to the Municipal Boards of Health of cities, towns and villages, the law is perfectly plain that the local boards come under the section of law and are required to co-operate with the Boards of Health, and whenever there is an outbreak of any contagious or infectious disease in their town, it is their duty to create by ordinances a Board of Health, and establish quarantine rules and regulations and adopt whatever measures that are necessary for the protection of the public. We have recently received information from a few towns during the past week, who decline to take any action in case of smallpox, and if they persist in their refusal to carry out the intent of the law, then it becomes necessary for the State Board of Health to visit these localities and urge them to do their duty, and if the authorities absolutely refuse to do anything, the city, town or village will then have to bear the expense of quarantine. We can hardly believe that the officials of any city, town or village could afford to evade this protection of the citizens of their community. It is a mistaken idea that many business men have to try and conceal contagious and infectious diseases in their towns, because it will eventually become known, and in hiding this knowledge, much valuable time is lost and no effort has been made to check the spread of the disease, and in the end the loss to the business men is many times multiplied simply because they have failed to do their duty in not reporting the disease.

What we desire in this matter is that every municipality in the state



and every County Board of Health in the state of Missouri, shall unite their energies and do all in their power to protect the general public from outbreaks of contagious and infectious diseases, and if they will observe the rules and regulations controlling contagious and infectious diseases, the number of cases will be reduced to the minimum and the spread will not go beyond the first household and the expense of caring for them will be greatly diminished.

We write this article setting forth the duties of the Local Boards, simply from the fact that within the past week we have received a number of reports of outbreaks of smallpox in the state, and as this is purely a winter disease, it requires our united efforts to protect the general public, and we are anxious to unite our forces in this good work.

We herewith add the "Vaccination Creed," clipped from the Bulletin of the North Carolina Board of Health:

"We, the undersigned, hereby publicly profess our firm belief, based upon positive knowledge, gained through years of personal experience and study of smallpox and vaccination.

"1. That true vaccination—repeated until it no longer "takes"—always prevents smallpox. Nothing else does.

"2. That true vaccination—that is, vaccination properly done on a clean arm with pure lymph and kept perfectly clean and unbroken afterward—never did and never will make a serious sore.

"3. That such a vaccination leaves a characteristic scar, unlike that from any other cause, which is recognizable during life and is the only conclusive evidence of a successful vaccination.

"4. That no untoward results ever follow such vaccination; on the other hand, thousands of lives are annually sacrificed through its neglect—a neglect begotten of want of knowledge."—*Bulletin of the North Carolina Board of Health, February, 1902.*

"At the last meeting of the Conference of State and Provincial Boards of Health of North America, after having had the subject under consideration at the hands of a committee for one year, the following definition of 'vaccination' was adopted:

"An inoculation, by scarification, puncture or infection beneath the epidermis of a vaccine which produces with some constitutional disturbance a typical vaccine vesicle, which leaves, after the pock has healed, its characteristic scar."

The requirements of this definition should be the guide for Local Boards of Health, as well as for all physicians in every case of vaccination, both public and private.

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### A LESSON FOR THE ANTI-VACCINATORS.

A most striking object lesson to the anti-vaccinators and one which would have been hard to improve upon had it been prearranged, has been furnished by the experience of a Dr. Immanuel Pfeiffer, of Boston. The story, the facts of which we glean from the *Boston Medical and Surgical Journal*, is of more than ordinary interest.

Dr. Pfeiffer, it seems, has been for years one of the most aggressive,



and withal the most consistent, of the opponents of vaccination, and of late has been giving the municipal authorities of Boston considerable trouble. As an outcome of the strength of the opposition aroused by him, the chairman of the Board of Health of Boston offered to allow any unvaccinated person, who desired to do so, to visit the smallpox hospital. No notice was taken at the time, but Dr. Pfeiffer subsequently applied for permission, giving as a reason that he wished to study the disease. The doctor, however, had only been vaccinated about 60 years before, in childhood. The visit was made on January 23rd, and due precautions were taken at the time to prevent his carrying away infection on his clothes. Great publicity was given to his visit, both by the daily papers and by his appearing on the 28th before the Committee on Public Health as a petitioner for the abolition of compulsory vaccination. Here he asserted that anyone, like himself, who had not been vaccinated for 60 years could expose himself to the danger of infection with impunity. Meanwhile the Board of Health, looking upon him as a suspect, had kept careful watch of his movements, and when he did not appear at the next meeting of the public health committee, twelve days after his exposure, search was made for him. It was not until four days later that they were able to locate him at his country residence in Bedford, where he was found to be seriously ill with smallpox, although his exposure to the infection had lasted not more than an hour. In contrast to this is the fact that of all the physicians and nurses in attendance at the hospital during the whole winter, not one had contracted the disease.

While there is nothing unusual in the contraction with the disease in the manner described, the great publicity which had been given to the matter by the victim himself and the way in which he was "hoisted with his own petard," will serve, we hope, as a wholesome lesson to these members of our profession who deny the most firmly established of principles.—*Montreal Medical Journal*.

### THE DOCTOR IN POLITICS.

THE following is abstracted from an address by Dr. Charles A. L. Reed, of Cincinnati, which was delivered before the Kansas City Academy of Medicine, Jan. 6, and will be printed in the February issue of the KANSAS CITY MEDICAL INDEX-LANCET. After having told a great many important things that have been accomplished, Dr. Reed enumerates some things that need to be done. Among other things he says: "Much, however, as has been accomplished, we must recognize that we are yet only in the beginning of progress. The preliminary skirmish has hardly yet been fought with contagious and infectious diseases. The first case of contagious disease ought not to occur in a community, although its development may be pardoned as an accident; but when a second case occurs, some law, natural or statutory, has been violated and somebody is to blame. The existence of an epidemic is a proclamation of defective civilization. The influence of heredity upon an individual and a people has not yet been reduced to definite terms. We are, in fact, only in the stage of preliminary observation with reference to many far-reaching questions, the solution of which must depend upon the accumulation of data upon the broadest possible



scale. Among these may be mentioned atmospheric contaminations from various sources, pollutions of the soil and the poisoning of streams alike by sewerage and sullage. This last subject, concerning which sufficient is already known to pass it on from the scientific to the legislative and executive category, has been brought afresh to the public mind by the tragic epidemics of typhoid at Plymouth, Pa., at Ithaca, New York, and the last at this very time, at Butler, Pa., each one of which was entirely and easily preventable under adequate laws and efficient executive administration. The necessity for inspection, by constant patrol, of all sources of general water supply; in fact, the protection of all the sources of life from the contaminations that are now being perpetrated, are subjects that the medical profession must bring home to the popular intelligence and the popular conscience.

Then there are some responsibilities that we must recognize as being constantly before us. Thus, the status of the medical service in both the army and navy and under the Bureau of Public Health and Marine Hospital Service, must always be the object of interested concern to physicians in civil life, if for *no other reason* than the demonstrated efficiency or inefficiency of such service is accepted, in a degree, by the public, as a criterion of the efficiency or inefficiency of the medical profession in general. This was lamentably demonstrated during the Spanish-American war, when the flower of American manhood, assembled in a salubrious climate, fell victims to preventible disease and died in such numbers that the record must forever remain one of the blackest pages in our military history. The calamity, calamity, if not crime, resulting as it did from the arbitrary course of the commanding officer, General John R. Brooke, in disregard, and offensive disregard, of the advice of his sanitary officers, was at once charged by the public to the inefficiency of the medical corps. "Where is your boasted sanitary science?" "Where is your progress in the art of curing" were the questions impertinently asked of doctors all over the country. Happily, the contrasting picture was furnished by a representative of our own profession, Dr. Leonard Wood, who, as commanding officer in the field, at the head of troops in the insalubrious climate of Cuba, made a record for the healthfulness of his command that must remain an object of pride and emulation; and who, subsequently, as military governor successively of the pestilential cities of Santiago and Havana, redeemed them to health, to commerce, and to civilization—a conspicuous service for which, if for no other reason, he deserves the gratitude, not only of his own profession, but of the Congress and the country. The efficient service of Surgeon-General Wyman, who, at the head of the Public Health and Marine Hospital Service and in connection with state health authorities, prevented the invasion of the country by the bubonic plague, is another instance that has helped the medical profession to retrieve the prestige it unjustly lost in consequence of the Brooke blunder at Chickamauga. These examples are enough, however."

"Another object, already hinted at, to which the organized profession should devote its serious attention, consists in securing the adoption, by all states, of uniform laws relating to the public health, to vital statistics and to the regulation of the practice of medicine. It seems that, under the



organization of our national and state governments, respectively, police powers, of which sanitary and medical laws are but expressions, were reserved to the states, and that, consequently, such laws cannot be enacted by the national government, except in so far as they may relate to commerce between states. This being true, it follows that no national law can be enacted that will touch these subjects—a condition that has resulted in the present lack of uniformity in state laws and the consequent inability to secure co-operation between the states in their enforcement. In the face of this state of affairs, it seems to be the duty of our profession as now organized to secure, through its constituted committees, drafts that will serve as models for the three sets of laws indicated; and that, as occasion arises for the amendment of existing laws or for the enactment of new ones, it is our duty to press these models for adoption by the various states until, in effect, the laws on public health, vital statistics and the practice of medicine, shall be uniform all over the United States."

### MISCELLANEOUS ITEMS.

During the year 1903—

Number of physicians examined for license.....	138
Number of midwives examined for license.....	31
Number of physicians licensed on diploma.....	254
Number of duplicate certificates issued.....	29

The State Board of Health will hold its next examination in Kansas City, Mo., April 12th, 13th and 14th, 1904. The following week they will hold another examination in St. Louis, Mo., April 19th, 20 and 21st, 1904. All those desiring to take the examination should make application to the Secretary for blanks and get their applications in at least ten days prior to the examination.

THE committees appointed by the State Board of Health in the different counties to assist in preparing a Revised Roster of the Licensed Physicians now practicing medicine in this state, will please correct the proof mailed to them some time ago, as we are anxious to go to press. Give this matter your immediate attention, and oblige the Publication Committee.

THE present members of the State Board of Health were appointed by Governor Dockery on the 18th of April, 1901. Since his appointment we have had two deaths on the Board, viz.: Dr. E. Lee Stanlee, of St. Louis, Mo., who died October 5th, 1902, and Dr. B. G. Dysart, Paris, Mo., who died January 16th, 1904.

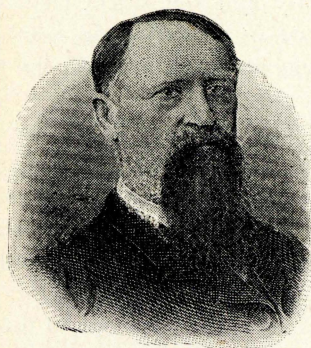
THE State Board of Health held its annual meeting at Jefferson City, Tuesday, January 5th, 1904, and the following officers were elected for the ensuing year: Dr. A. W. McAlester, Columbia, Mo., President; Dr. B. G. Dysart, Paris, Mo., Vice-President, and Dr. W. F. Morrow, Kansas City, Mo., Secretary.

DR. R. H. GOODIER, of Hannibal, Mo., was appointed a member of the State Board of Health to fill the vacancy made by the death of Dr. B. G. Dysart, of Paris, Mo.



## IN MEMORIAM

### DR. B. G. DYSART, VICE-PRESIDENT STATE BOARD OF HEALTH



Dr. Dysart died at his home, in Paris, Mo., January 16, 1904, of pneumonia, having been sick only thirty-six hours.

The Doctor was born in Randolph county, Mo., September, 1834, and was educated at the old McGee College. He began the study of medicine in 1856, and graduated at the Jefferson Medical College. He practiced a short time at Mound City, and entered the Southern army as a surgeon under the great Cockrell. In 1864 he located at Paris, and in 1869 was married to Mrs. Olivia Ragsdale. He was an affectionate husband.

He practiced over forty years of life—an open book—every page of which can be scanned to his credit. To the citizens of Monroe county: you have lost a physician to whom all can pay tribute. True womanhood can bathe a noble brow in her tears; the aged citizen testify to his good deeds; a business man, by a frugal life and sober habits, much of this world's goods have been accumulated; an educated, refined, Christian gentleman. Can more be said? Yes. His neighboring physicians, who knew him well, can pay their respects to the true physician that he was, and his inspiration still lives.

“Cold in the dust his cherished heart may lie,  
But that which manned it once can never die.”

Physician and surgeon, skilled in art and science—a rare combination.

As a public official he was efficient and honest, ever mindful and true to guard the interest of the great State of Missouri.

“A wise physician, skilled our wounds to heal,  
Is more than armies to the public weal.”

Peace to his ashes and bright be his memory.



### **TYPHOID FEVER.**

TYPHOID fever is due to a specific rod shaped bacterial organism. This organism escapes in the stools, urine and even sweat of the typhoid patient. Hence, all these excretions must be looked upon as sources of infection. During the disease the stools and urine ought to be treated with carbolic acid or air-slacked lime, and then buried in the ground or emptied in the sewer. The skin should be washed frequently and the sheets changed. The hands of the attendants should be washed in an antiseptic solution, such as bichloride of mercury 1-1,000, each time after contact with the patient, his excretions, or the sheets and towels used by him.

Typhoid fever is a preventable disease, and should not be allowed to exist in a civilized and progressive community. It is most frequently contracted from polluted water, by means of which the germs gain admission to the intestinal tract. It may be contracted through direct contact with the patient or his belongings. Flies may carry the germs from privy vaults or surface closets which have not been disinfected. Typhoid excretions drying up on the soil may be dusted up and thus scattered about to infect other people. The milkman may use polluted water, or he may have typhoid fever in his family, and thus infect his milk, by conveying germs on his hands to the milk. However, in a large majority of the cases properly investigated, typhoid fever has been traced to a polluted water supply.

It would be a very easy matter to guard our water supplies against these germs, if typhoid patients were the only ones capable of infecting the drinking water. However, even after these patients have recovered and have gone about their work, they still continue to excrete typhoid germs in their urine, especially for a variable length of time. Many cases of mild typhoid are never diagnosed, or even suspected; some may not even go to bed. Nevertheless, germs from a mild typhoid case are just as dangerous as those from a fatal case. Hence, any pollution of water supplies must be regarded with suspicion, in fact, with horror. Very recently we have had a painful reminder of how extensive a loss of human life may be due to a slight pollution of the water supply of a certain city. In Butler Pa., a city with 15,000 inhabitants, 1,200 people contracted typhoid fever almost simultaneously. Families were destroyed, business ruined and thousands of dollars lost. In this day and age, when our knowledge of these conditions is so well known, it is not right to wait for a terrible epidemic before investigating the water supplies, or putting into operation conditions which will prevent such occurrences.

The State Board of Health in its attempts to improve the sanitary conditions throughout the state, has found it necessary to establish a laboratory for the investigation of these conditions. Here water analyses are made, and advise upon the results given. Sputum is examined for tubercle bacilli; Loeffler blood serum cultures for diphtheria; blood spreads for malaria; blood for the Widol reaction of typhoid fever, etc.



### THE EVIL EFFECTS OF TOBACCO.

THAT tobacco is a poison no one attempts to deny, its poisonous effects being manifested in the beginner's attempt to bring his system into a state of tolerance to it. The deathly sickness produced by the initial dose of tobacco is all the evidence that is necessary to demonstrate conclusively that it is a virulent poison, and that the human organism is not at all in sympathy with cultivating its acquaintance. In the majority of instances it requires a great deal of courage and stick-to-it-iveness on the part of the beginner to accustom himself to its poisonous influence, and, were it not for the fact that others have succeeded, many would undoubtedly give up in despair.

Tolerance is soon established, however, and the felicity obtained by its use soon causes the individual to forget his early experiences. Sooner or later evidences of faulty nutrition, which may be manifested in a variety of ways, make their appearance, and if a careful study into the etiology of these conditions is made, a very large percentage of the cases will be found to have their origin in the use of tobacco, alcohol, tea, coffee and other nutritive substances.

Dr. I. N. Love, in an address on Nutrition and Stimulation, read before the Mississippi Valley Medical Association at Asheville, N. C., October, 1900, and appearing in the March 2nd number of the Journal of the American Medical Association, summarizes his views with reference to the use of tobacco as follows:

"1. Smoking is more harmful than chewing, for the reason that the nervous system is not only more injuriously affected, but the catarrhal disturbances of the air-passages render the smoker more liable to dangerous and fatal diseases of the air-passages.

2. The excessive smoker is not only more liable to pneumonia, la grippe, tuberculosis, laryngeal and pulmonary, as the sensitive mucous surface and the bankrupted nervous system presents a double invitation at all times, but fatal results are more apt to occur. Every case of laryngeal tuberculosis coming under my observation for several years has presented a history of the victim's being a smoker, in the majority of cases, to excess.

"3. Heart failure is a frequent complication, and is serious with excessive smokers.

"4. Cigarette smoking is worse than either the cigar or pipe, but only for the reason that the cigarette being milder tobacco, the smoker universally inhales the tobacco fumes; and when we realize what are the component parts of tobacco smoke and how direct are the routes from the vesicles of the lungs into the blood current, we can appreciate the ill effect.

"5. Inveighing against the cigarette on the ground that the paper is poisonous and the tobacco drugged, mixed with opium, Indian hemp, etc., is all wrong, as the cigarette, being a milder tobacco, perfectly pure, and the paper unobjectionable, if smoked without inhaling and in a temperate way, is to be preferred.

"6. The cigarette smoker nearly always inhales the smoke, and be-



coming habituated to this quick toxic action, he will not smoke without inhaling, whether he used the cigarette, the cigar or the pipe, for the same reason that the morphine habitue, accustomed to the hypodermic method, will not be satisfied with the drop through the mouth; both victims want quick action.

"7. Children who use tobacco before reaching maturity have their growth interrupted, as nothing more definitely interferes with the equilibrium of tissue building, digestion, assimilation, elimination and metabolism than tobacco, and for these reasons, its use favors gouty diseases, atheromatous degeneration, premature senility and decay. The excessive users of tobacco are crippled in their general equipment, and are in no form to wrestle successfully with any disease.

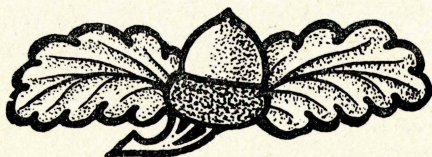
"8. He who smokes cigarettes to excess, or uses tobacco in any form to excess, is in danger of becoming an alcoholic, but in even greater danger of becoming a druggie, as tobacco is so closely allied to opium and Indian hemp. In a general way, one excess invites another as the will power becomes lessened.

"9. Nothing is so apt to bankrupt the sexual equipment as tobacco, unless opium, as it stands to reason that a cerebrospinal paralyzant must obtund sexual desire and power.

"10. The numerous mental wrecks, youths who have come under my care during the past ten years, whose lives were failures, or who fill suicide's graves, impress me that to-day tobacco stands as the gravest danger confronting the new century, and the medical profession has a fearful responsibility in educating young men and their parents to appreciate this danger.

"The business world is, I am glad to see, undertaking the solution of the tobacco problem, the same that it has that of alcohol, in that it is declining to employ cigarette fiends, as well as moderate or excessive drinkers.

"I am firm in the view that the medical profession must study calmly, tolerantly, temperately the problems related to stimulants of all kinds, but tobacco and alcohol in particular, and they put themselves in best form for doing the best work along these lines, and wielding their greatest influence for good, by themselves being exemplars of temperance, self-restraint, self-denial and correct living.—*Charlotte Medical Journal*.





**COUNTY BOARDS OF HEALTH.**

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## Warsaw, Mo.

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J. A. Russell, M. D.
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Harrisonville, Mo.
- Stockton, Mo.
- Stockton, Mo.
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Wayland, Mo.  
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- Kearney, Mo.  
Liberty, Mo.  
Kearney, Mo.  
Liberty, Mo.
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Cameron, Mo.
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- Chillicothe, Mo.  
Wheeling, Mo.  
Chillicothe, Mo.  
Chillicothe, Mo.
- Macon, Mo.
- Macon, Mo.
- Frederickton, Mo.  
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Hannibal, Mo.  
Palmyra, Mo.  
Hannibal, Mo.
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Rocky Comfort, Mo.  
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| L. LaFont,                   | New Madrid, Mo.   |
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| Horace Bowers, M. D.         | Neosho, Mo.       |



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Aud, Mo.  
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- Ozark, Gainsville, Mo.  
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J. T. Arnold, M. D. Gainsville, Mo.
- Pemiscot, Caruthersville, Mo.  
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S. H. Steele, M. D. Caruthersville, Mo.  
Hayti, Mo.  
Caruthersville, Mo.  
Caruthersville, Mo.
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Frohna, Mo.  
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Perryville, Mo.
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St. James, Mo.
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J. W. Rule,  
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Louisiana, Mo.  
Curryville, Mo.  
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Polk, Bolivar, Mo.	
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G. W. Colvert,	
T. J. Downing, M. D.	New London, Mo.
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Potosi, Mo.

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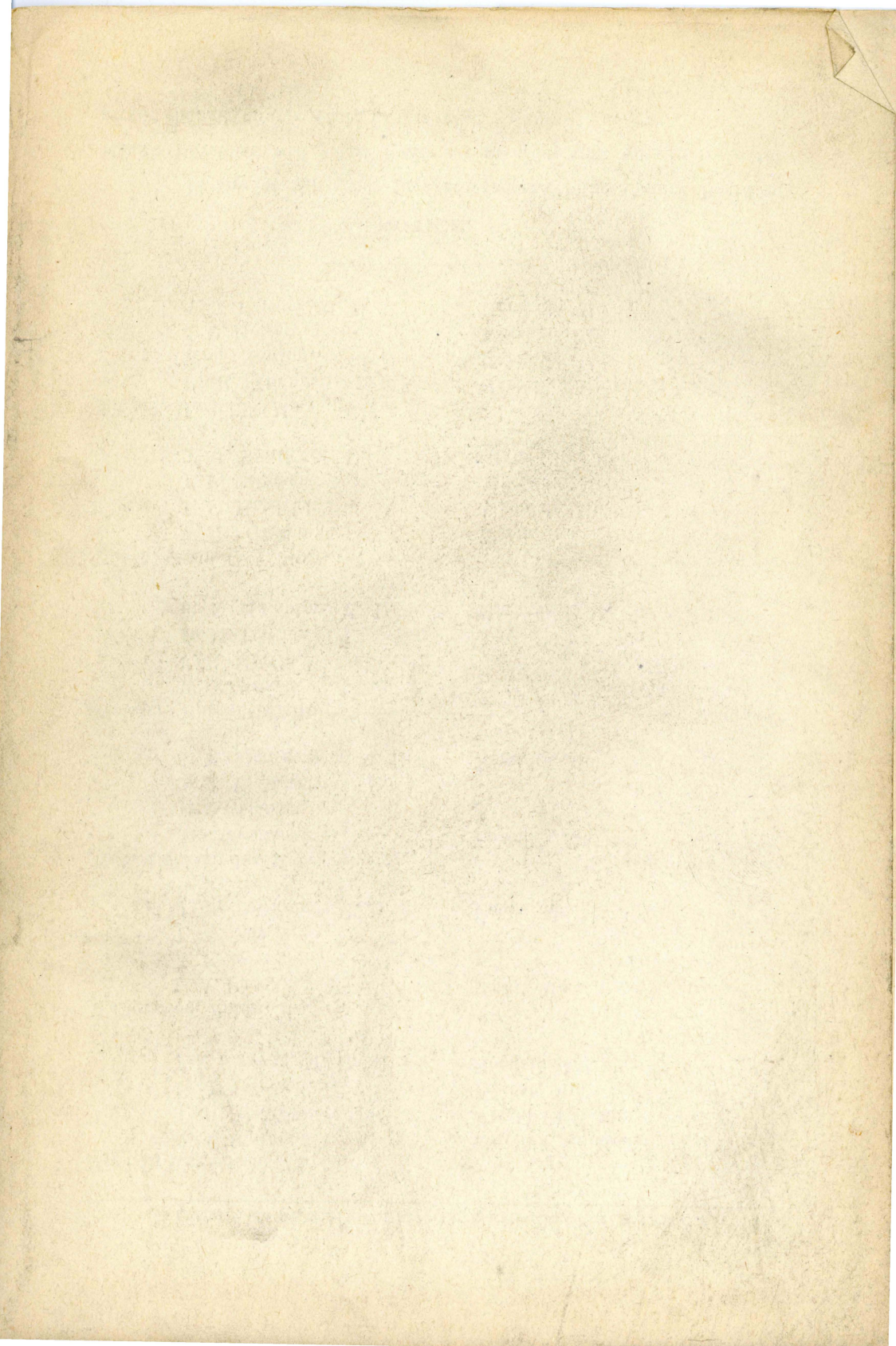
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**NOTICE.**

If any of the above lists are incorrect, the County Board of Health Physician will please notify us in order that we can make the proper changes on our record in this office.







# BULLETIN

## OF THE

# MISSOURI STATE BOARD OF HEALTH

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**VOL. I.**

**FEBRUARY, 1904.**

**NO. 2**

### HEALTH OFFICERS. THEIR WORK AND THEIR PAY.

The following we clip from the Montana State Board of Health Bulletin, which we regard exceedingly valuable because it is just, fair statement of facts, and we hope to see its suggestions carried into operation.

A physician should no more be expected to render his services free of charge to a county than is the judge, the sheriff, the assessor or any other county officer. The pay of a county health officer should be in proportion to that received by other county officers. The county health officer is required to be a skilled physician, and his pay should be in proportion to that received by other county officers who are required to have an educational qualification, as is the case with the county attorney, superintendent of schools, etc. The county health officer must, in a sense, fight against his own interests in a financial way. If he makes a successful effort to prevent the spread of communicable diseases he deprives himself to a certain amount of practice, for it must be admitted that he would get his proportion of the cases resulting from the spread of such diseases.

This may sound cold blooded and contrary to the accepted ideas of the medical profession. I do not say nor do I mean to insinuate that any physician ever deliberately caused the spread of any contagious disease, such a one would be unworthy of the name of "doctor." I do not accuse any one of not using care to prevent the spread of communicable diseases, but the degree of care might possibly be increased in some cases and—well, self preservation is the first law of nature.

In our state there are only three or four health officers who receive anything like reasonable pay for the work expected of them. When we consider the amounts paid for the protection of property from fire, and domestic animals from wild beasts and poisonous plants, one must naturally ask if the conditions do not indicate a greater love for our property and our cattle than for our children? Whatever the indications may be, the trouble arises from the fact that the people do not realize the benefits to be derived from preventive medicine, and that these benefits can be derived only through the agency of well supported and well paid health officers. The following data regarding the pay received by the various health officers of



our state was obtained partly from the county clerks and partly from the health officers. Though an effort was made to secure the information from all counties five failed to respond, the other twenty-one giving the following data:

One county pays its health officer \$600 per year and allows mileage at the rate of \$1.00 per mile when traveling in the discharge of the duties of his office.

Two pay \$600 and allow mileage at the rate of 10 cents per mile.

One pays \$600 per year and allows no mileage.

One pays \$300 per year and allows no mileage.

One pays \$200 per year and allows no mileage.

One pays \$100 per year and mileage at \$1.00 per mile

One pays \$100 per year and no mileage.

One pays \$75 per year and mileage at \$1.00 per mile.

One pays \$75 per year and 10 cents per mile.

One pays \$24 per year and \$6.00 per day actually employed.

One pays \$8.00 per day when actually employed and 10 cents per mile.

One pays \$1.00 per mile when required to travel, no other fees.

One pays \$10 per year and no mileage.

One pays 50 cents per mile and "reasonable fees."

Six pay nothing and allow no mileage.

Thus it appears that the best paid health officer in the state receives \$600 per year and \$1.00 per mile when required to travel in the discharge of his official duties. This we would consider reasonable pay and yet it is less than that received by any other county officer so far as we are able to learn. Our county pays its health officer the princely wage of \$10 per year, while six counties actually expect a physician to devote his time to the work of health officer for NOTHING.

The duties of a county health officer are many and difficult. He is not required to merely tack up a quarantine sign when notified of a contagious or infectious disease. He is required to be a skillful physician. It is his function to prevent the spread of communicable diseases. He must use his skill in determining when it is safe to raise quarantine in any given case and whether a specified disease is one that comes under the quarantine rules, and what form of quarantine is required for the specific disease. He must directly supervise the disinfection of all property that has been exposed to a quarantinable disease. He must search out the source of all communicable diseases that may appear in his district, determine the quality of the water used for domestic purposes and whether the sickness in your family comes from the fact that your privy vaults drains into your well or that the flies are bringing disease germs from your neighbor's pig-pen to your table.

Having determined the source of the disease he must see that it is abated. He must keep an eye on the general sanitary conditions in his district and see that all unsanitary nuisances are abated. In performing these duties he must incur the illwill of many, and probably lose many patrons in so doing. This can not be helped and any one proposing to perform the duties of a health officer must expect to make enemies, until



such time as the people shall appreciate the benefits to be derived from the sanitary and quarantine regulations.

These are only a part of the duties of an efficient health officer. They can be performed only by a skilled physician. They cannot be performed by the old, wornout physician, because he has not the physical strength to perform these duties. They cannot be performed by the busy practitioner for he has not the necessary time to devote to the work. The work can be done properly only by the bright, energetic young physician, with plenty of time to devote to the work and a reputation to establish.

If the work of a county health officer is properly performed what will be accomplished? A competent, energetic, tactful health officer is the most valuable officer a county can possess. In preventing the spread of communicable diseases he saves more to the taxpayer than any other county officer. Many of our counties pay their county physicians special fees for treating cases of smallpox. The usual fee for this work is five dollars per day for each case. The average run of small-pox cases is three weeks. In other words, the county pays one hundred and five dollars for the treatment alone in each case of smallpox, a disease that might be entirely prevented by competent health officers. Six such cases in a year would about pay for a good health officer.

But why be so careful about smallpox and so lax about other communicable diseases? Smallpox is very infectious, but successful vaccination repeated until it will no longer take will prevent the disease. Among those thus vaccinated the disease will not appear and these people can be exposed to the disease in any form without fear of contracting it. Measles or scarlet fever are far more infectious than smallpox. In addition to being less infectious than measles or scarlatina smallpox is not so fatal as either of these diseases. A study of about 60,000 deaths from the various communicable diseases from all over the country gives the following results: For every death from smallpox there are twelve deaths from measles, thirty-six from scarlet fever, one hundred and twenty-five from diphtheria and one hundred and thirty-five from typhoid fever.

You may say that the greater number of cases of scarlet fever and measles than of smallpox makes these figures of no value. Possibly that is true in the case of the deaths considered in collecting these figures as the number of cases of each disease was not obtainable, but we would call your attention to the following figures from the report of the Iowa State Board of Health. Out of 11,220 cases of smallpox reported there were 34 deaths, out of 5,114 cases of measles there were 39 deaths, out of 2,118 cases of diphtheria there were 266 deaths out of 5,028 cases of scarlatina there were 144 deaths, and out of 1,161 cases of typhoid fever there were 174 deaths.

These figures show the mortality from a given number of cases of measles to be over twice that from smallpox. All of these diseases are preventable and a very large percentage of them would be prevented by a competent, energetic health officer.

Consider the amounts paid out by the taxpayers for doctor bills, nurse hire and loss of time on account of these preventable diseases. Add to these amounts the value of the lives lost from them. (The estimated value of a human life, ever and above the cost of maintenance, is \$1,000) and you



will begin to appreciate the monetary value of a competent health officer. In states where boards of health have been working for twenty years or more the mortality among children has been very greatly reduced and it has been proven that a competent health officer returns to the county many times over the amount paid him, simply in the lives saved by preventing the spread of these diseases. A competent health officer is the most valuable officer a county can possess, but a poor health officer is worse than none. You can no more expect to receive the services of a competent health officer without reasonable pay than you can to secure the services of a competent attorney without pay. No person, corporation, city, county or state receives anything of value for nothing.

### **THE PHYSICIAN.**

It is the high prerogative and responsible duty of the physician to conserve and protect the public health. He is the principle defense the people have against invasion and spread of contagious and infectious diseases, that, ever and anon, come with such distressing circumstances to threaten and blight the hopes of the human family—to rob the heart of love and cheat its fond ambitions.

The state licenses and commits this vital interest into his keeping, and demands that he fulfill the high office of his profession. He is ex-officio a member of the Board of Health in and for his respective community, and should see to it that the provisions the law guarantees for the public safety are properly observed and enforced.

Noblest benefactor to his fellowman is the true physician—loyal to his duty and faithful to the public confidence. And it is no less the duty of the citizen to respect and assist the intelligent physician in the exercise of his prudent authority as he seeks to prevent, limit and control the spread of all contagious and infectious diseases in the community.

The greatest measure of good is in concerted action between physician and people, and often prompt and united effort abates and suppresses in light outbreak, what otherwise might extend and become a devastating pestilence. When a case of contagious or infectious disease occurs in a community, however mild, it should be promptly reported to the local authorities, that efficient measures may be taken to prevent its spread, and no murmur nor complaint should be heard from the affected family because of the hardships incident to isolation and quarantine. It is simple justice to the larger part of the community. However, I would not intimate that any harsh, vigorous methods be employed beyond the necessities of the case. Let us remember that while we must be firm, we must also be just, for the consideration of human sympathy is due to all who suffer.

### **MUNICIPAL BOARD OF HEALTH.**

Our state is dotted over with beautiful towns, noted for their schools, churches, commercial enterprise and good government. The health department should be an active factor in promoting these ends in every municipality. The health officers should investigate every detail of the city government that tends to affect the health of its citizens. They should examine



school houses and note location, light, heating, ventilation, etc., and advise the maintainance of proper sewerage, the removal and destruction of all refuse matter, a good, pure water supply and the suppression of contagious and infectious diseases.

The efficiency of this work depends largely upon the co-operation of the health board with the other city officials. If they want pure air, pure water, a clean city—they can have it. If they want to stop the filthy, loathsome and dangerous habits of promiscuous spitting on sidewalks, in hotel lobbies, public halls, stations, cars, etc—they can do it. If they want to suppress contagious and infectious diseases, it will be done. With ears that can hear and eyes that can see, there should be no trouble in having a clean city, no trouble in establishing a proper quarantine against contagious diseases; but when it comes to dealing with the water supply for our smaller cities and towns, that cannot afford to employ a bacteriologist and equip a laboratory, the health officer is lost, not being able to say whether the water supply is good or bad, till surprised by an epidemic, probably of typhoid fever. Then the water that looks so well and tastes so good is subjected to a thorough analysis and found to be loaded with disease germs or poisons, highly destructive to human life. Hence the importance of careful analysis of the water supply by some thorough bacteriologist, at least once in two months through the summer and autumn seasons, and this the state board of health has made possible for any municipal health board to do at very little expense.

### THE DUTIES OF HEALTH OFFICERS.

The object and purpose of creating and establishing health officers in a city, village, town, county or state, are perfectly apparent to the present informed public. The great progress in the commercial world and the rapid transit through our country; the great traveling public, together with many other advances of civilization, makes it an essential thing to create and establish necessary protection to meet the requirements that visit us daily.

All of our leading states are making rapid advancements in perfecting their laws to assist in the establishing of Boards of Health throughout the counties and municipalities of the state; feeling that the importance of our crowded cities and neglected country districts need education in sanitary science. We are constantly reminded by the daily press of out-breaks of contagious and infectious diseases throughout the country, and in many instances, wholly depopulates a city by its fatality.

The Medical Profession and Bacteriologists have established beyond a question of doubt, that contagious and infectious disease can and should be controlled and greatly limited—if not completely prevented. Smallpox, diphtheria, scarlet fever, measles, whooping cough, and consumption are subject to sanitary and quarantine restrictions. Then the solution of the question is that our duties as public officers, to preserve and protect the lives of the people of our state, makes it necessary to give these subjects special consideration and study. It is our duty to look into the sources of these infections; if it be typhoid fever—carefully examine the water and food supply; if it be consumption, look well to the sanity surrounding the public schools and public institutions, and prevent if possible the leading and



prime cause of this disease to our fellowmen. This can be done by observing a few simple rules of precaution which will subsequently be discussed separately and will receive special consideration in a future issue.

When Boards of Health and Health Officers reach the point where they realize the responsibility of the position they occupy, then we will be ready to protect the people from contagious and infectious diseases. It is the duty of every Board of Health or Health Officer to keep pace with the times and literature on these subjects in order that they can best conserve the interests of the public. Whenever a case of contagious or infectious disease—it matters not how mild it may be—makes its appearance in a district, the Health Officer should at the very first intimation of the appearance of the disease, proceed to make an investigation of the nature of the infection or contagion, and when he has made his diagnosis (the Health Officer should be a good diagnostician, and familiar with all the phases of the disease), then it is his duty under the law, to announce to the public the existence of this contagious or infectious disease, its location, etc. It is his legal duty to isolate these cases at the very earliest moment, and prevent as far as it is possible, with his knowledge of the prophylactic science to protect the public from these infections and contagions. It is necessary for him to place a placard in a conspicuous place on the house in which the disease exists as a warning to the public of its existence. It is his duty, though this patient be under the care of a physician not a member of the Board of Health nor a Health Officer, to occasionally visit the patient and see that his rules looking to the protection of the public, are being successfully carried out. It is not necessary nor proper for him to use his official position in such a manner that it will embarrass or conflict with the attending physician, but on the contrary, it is his duty as an official to be in perfect harmony with the physicians, and let them clearly understand that there is no disposition on the part of the official to interfere with them whatever, in their treatment of this class of cases, and by this course, he will have the co-operation of the medical profession, which is absolutely essential in the management of this class of disease. If a physician feels that he is not considered, he will be inclined not to assist the Health Officer, and the result would be, the Health Officer would not be informed as to the existence of contagious or infectious diseases. When a cure has been effected and the disease has reached its limit, then the physician in attendance should notify the Health Officer of this fact and that the house and patient have been thoroughly fumigated, and all possibilities of a further spread of the disease have been destroyed by a thorough disinfection of the house with formaldehyde gas. We do not mean only to disinfect the room in which the patient is confined, but we want to impress upon the public, the importance of disinfecting the entire house, so thoroughly and completely that an outbreak of the disease is impossible. Our experience has taught us that it is the worst sort of policy for a household, for a business house, for a doctor or for anyone else to attempt to conceal the existence of a contagious or infectious disease, because if this is done, there is no sort of protection to the comers and goers, and in a short time, the whole community will have been exposed to this disease and then the expense of managing and controlling the cases is many times multiplied. We have demonstrated this fact in smallpox epidemics for the past five years.



The impression prevailed with the people of many of the localities of the state where smallpox broke out, that it would destroy the business and commercial interests of their towns if it was known that this disease existed in the community, and as soon as we demonstrated the fact that the disease could be checked in the first house, since that time the prevalence of smallpox has been reduced 75 or 80 per cent. There is no question but what these contagious and infectious diseases sometimes kill, and it must ever be remembered that the mildest case of a contagious or infectious disease, may produce in the person exposed, the most malignant type of the disease, so we can readily see the absolute importance of early action in these matters.

### **THE DUTIES OF THE SCHOOL TEACHER IN THE COMBAT OF TUBERCULOSIS AS A DISEASE OF THE MASSES.**

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The following extract is copied from the "Teacher's Sanitary Bulletin" of Michigan which was delivered before the Teachers' College of the Columbian University in the city of New York, Feb. 25th, 1903:

The modern teacher of our children has indeed a glorious calling, but his responsibilities are also great. The requirements for proficiency become more severe from year to year; you must master branches of knowledge which were not thought of in public schools twenty-five years ago.

In addition to your many duties as students at this great university, I come today to ask you to listen to me on a subject which is not pleasant and perhaps not even interesting; yet in your labors as teachers as well as in ours as physicians, we must often deal with subjects which are neither pleasant nor interesting, and it is only the sense of duty which helps us to accomplish unpleasant tasks.

I am to speak to you today of "The Duties of the School Teacher in the Combat of Tuberculosis as a Disease of the Masses." I have chosen this theme for the purpose of asking your help in the work which the Committee on the Prevention of Tuberculosis, of the Charity Organization Society of the City of New York, has outlined for itself. Before I attempt to describe in detail the duties which devolve upon you as public teachers and the ways and means whereby you can be helpful, let me first briefly summarize our present knowledge of the disease called pulmonary tuberculosis, consumption or phthisis pulmonalis.

In the first half of the nineteenth century little attention was paid to the theory of infectiousness of tuberculosis even by medical men. The contagiousness or communicability of the disease could not be scientifically demonstrated, and although there were physicians here and there who believed in the infectiousness of the disease, nothing positive was taught in



regard to it at the centers of medical learning. At last, in 1865, the French physician Villamin demonstrated beyond a doubt that tuberculosis could be transmitted from one individual to another. He inoculated animals with tuberculous substances and reproduced tuberculosis not only in the lungs but also in other portions of the body.

After this discovery there seemed to be no longer a doubt that tuberculosis was an infectious disease and that for its production a specific germ was essential. The discovery of this specific organism (*Bacillus tuberculosis*) was reserved to the great German scientist Robert Koch (1882).

As to the prevalence of tuberculosis, particularly in its pulmonary form, I cannot say anything which is not known to every intelligent man and woman. In fact, we have accustomed ourselves to the high death-rate from pulmonary tuberculosis, considering it as something inevitable. The recent great disaster at Martinique, in which 30,000 people died almost in an instant, caused the deepest sympathy and a just commotion throughout the civilized world, yet the annual tribute of the United States to pulmonary tuberculosis is over 100,000. Each year the world yields up 1,095,000, each day 3,000, each minute two of its people, as a sacrifice to this plague. Of the 80,000,000 individuals now peopling the United States more than 10,000,000 must inevitably die of this disease if the present ratio is kept up. According to some statisticians every sixth, and according to others, every seventh death is due to tuberculosis.

Now let us see what this disease is which causes such ravages among all civilized nations. On account of its fearful mortality Oliver Wendell Holmes has called tuberculosis "The great white plague." It is particularly prevalent among the masses—the poor—and appears most often in people between the ages of fifteen and thirty-five. The Germans have named consumption "Volkskrankheit," i. e., disease of the masses.

Pulmonary tuberculosis, or consumption, is a chronic, infectious and communicable disease, caused by the presence of the tubercle bacillus, or germ of consumption in the lungs. It is locally characterized by countless tubercles, that is to say, small rounded bodies, visible to the naked eye. The bacillus of tuberculosis is a minute organism in the shape of a cylindric rod, visible with a high power microscope only after certain staining reagents have been applied to it. This micro-organism, belonging to the order of schizomycetes or fission fungi, in the lowest scale of vegetable life is the specific microbe of tuberculosis; without its presence there is no tuberculous disease. This parasite not only gradually destroys the lung substance through ulcerative processes, but at the same time gives off certain poisonous substances called toxins, which give rise to various, and often serious symptoms.

The important symptoms of pulmonary tuberculosis are cough, expectoration, fever—especially in the evening hours—difficulty in breathing, pains in the chest, night-sweats, loss of appetite, hemorrhages, and emaciation. In the matter expectorated it is often possible to find the tubercle bacillus.

How may this germ of tuberculosis enter the human system?

There are really three methods whereby this germ may enter, namely,



by inhalation, that is, being breathed into the lungs; by ingestion, that is, being eaten with tuberculous food; and by inoculation, that is, the penetration of tuberculous substance through a wound in the skin. Let us treat first the most frequent method of propagation of tuberculosis, namely, that arising from the indiscriminate deposit of tuberculous sputum. A consumptive individual, even at a period when he is not confined to his bed, may expectorate enormous quantities of bacilli. By careful observers it has been estimated to amount in some individuals to about 7,000,000,000 per day. Now, if the expectoration, or spittle, is carelessly deposited here and there, so that it has an opportunity to dry and become pulverized, the least draught or motion in the air may cause it to mingle with the dust, and the individual inhaling this dust-laden atmosphere is certainly exposed to the danger of becoming tuberculous if his system offers a favorable soil for the growth of the bacilli. By "favorable soil for the growth of the bacilli" must be understood, any condition in which the body is temporarily or permanently enfeebled. Such a condition may be inherited from parents, or acquired through alcoholism or drunkenness, or other intemperate habits, through privation or disease.

Beside the danger arising from carelessly deposited sputum or spittle the inhalation or ingestion of the small particles of saliva which may be expelled by the consumptive during his so-called dry cough, when speaking quickly or loudly, or when sneezing, must also be considered as dangerous for those who come in close contact with the invalid. These almost invisible drops of saliva may contain tubercle bacilli. Recent experiments in this direction have shown the possibility of infection by this means|

The next most frequent method of the propagation of tuberculosis is through the ingestion of the bacillus, that is to say, when the germ of tuberculosis is taken with the food.

The third and much less frequent cause of tuberculosis is inoculation or penetration of the tuberculous substance through the skin.

A patient suffering from pulmonary tuberculosis should know that no matter in what stage of the disease he may be his expectoration or spittle may spread the germ of the disease if the matter expectorated is not rendered innocuous before it has a chance to dry and become pulverized. The patient should, therefore, always spit in some receptacle intended for the purpose. It is best to have this vessel made of metal so it will not break. It should be half filled with water or some disinfecting fluid, the main thing being to make it impossible for the expectoration to dry.

In schools, factories, stores, railroad cars, waiting-rooms, court-rooms, restaurants, saloons, meeting places, theaters, menageries—in short, wherever many people congregate—there should be a sufficient number of cuspidors well kept and regularly cleaned. They should be made of unbreakable material and have wide openings. It would be preferable to have them elevated so that they would be easier to reach. If such measures are carried out there will be no excuse for any one to expectorate on the floor and thus endanger the lives of his fellowmen.

When outdoors the patient should use a pocket flask of metal, strong glass, or pasteboard. There are numerous kinds of flasks in the market. A handkerchief should never be used as a receptacle for sputum.



Patients who are too sick to make use of light porcelain or aluminum cups should have a number of moist rags within easy reach. Care should be taken that the rags always remain moist and that the used ones are burned before they have a chance to dry. The paper spit-cups with their contents should, of course, also be destroyed by fire.

There will always be some consumptives who cannot be persuaded to use the pocket flask, for the reason that they do not wish to draw attention to their malady. The only thing for such people to do is to use squares of soft muslin, cheese cloth, cheap handkerchiefs, or Japanese paper handkerchiefs, specially manufactured for that purpose, which can be burned after use. They should place in their pockets a removable lining of rubber or other impermeable substance, which can be thoroughly cleaned. This additional pocket could be fastened to the inside of the ordinary pocket by clamps and would thus be of no inconvenience to the patient. A pouch of rubber or an Oriental tobacco pouch may be used in place of the extra pocket of impermeable material.

The danger of dissemination of the bacilli through the so-called dry cough is relatively small; we should, nevertheless, insist that the patient hold a handkerchief before his mouth or nose when he coughs or sneezes. The consumptive should be advised to carry two handkerchiefs with him, one to hold before his mouth and to wipe it with after having expectorated; the other to use only to wipe his nose. By being careful with the use of his handkerchiefs the danger of infecting his nose and bronchial tubes will be materially lessened.

All soiled linen (sheets, pillow-cases, underwear, napkins, handkerchiefs, etc.) used by the consumptive, should not be handled more than necessary, but should be placed in water as soon as possible after removal from bed or body. It is better to wash these articles separately, and only after having been thoroughly boiled should they be put with the common laundry. Whenever it is not possible to carry out these precautionary measures in their entirety, one should strive to follow them so far as it is in one's power.

Concerning the danger from infection through tuberculous food we will say that whenever one is not reasonably certain that the meat he eats has been carefully inspected and is free from disease germs, it should be very thoroughly cooked. By this means one is certain to kill all the dangerous micro-organisms. Against the sale of tuberculous milk there are excellent laws in some States of the Union which are rigorously enforced. In some the laws are less good, and in some there are no laws at the present time.

In justice to farmers and dairymen, it must, however, be said that there are many who do their very best to protect themselves and their fellowmen from the danger of tuberculosis. They have their cows tested regularly, destroy the animals which are found to be tuberculous and keep their stables and utensils for milk as clean as possible.

Unless one can be reasonably sure that the cows from which the milk is derived are healthy, the milk should be boiled or sterilized before use, especially when it is intended as food for children. Milk obtained from stores and from milk peddlers should invariably be submitted to boiling



or sterilization. When milk is kept slowly boiling for five minutes, all the bacilli are killed, and the same result is obtained by the sterilizing process, which is to keep the milk heated for at least half an hour at a temperature of about 70 degrees C. or 160 degrees F. There are now in the market a number of cheap and practical apparatuses for sterilizing milk, which can be obtained in almost any drug store.

Raw fruit bought from the pushcart man, or for that matter, derived from any other source, should be washed, peeled, or cooked before being eaten. You teachers should impress these precautions upon the little ones and the big ones in your charge. If simple warning does not suffice, tell the children how some of the enterprising pushcart men treat an apple, for example, to make it shine and seem appetizing.

There is another way whereby the germs of tuberculosis may possibly enter our stomach or intestines, namely, through kissing the consumptive, or using utensils which have been soiled by the saliva of the patient. Therefore, the consumptive should never kiss, no matter whom, on the mouth, and children should be taught to allow none to kiss them except on the cheek.

Tuberculous patients should have their own drinking glasses, spoons, forks, etc., or at least, all table utensils which have served for them should be placed in boiling water after use.

It is, of course, also possible for the consumptive to contract intestinal tuberculosis when, out of false modesty, he swallows his expectoration. May I be permitted to insert here a little medical advice? Unless the patient feels that he must expectorate, he should not cough. Dry coughing is scratching the throat because it tickles. This is not only unpleasant but it also injures the throat. With the exercise of a little will power and discipline one can suppress this dry and unnecessary cough. The consumptive patient should remember never to touch food before having washed his hands very thoroughly. Even with the greatest care it is possible that he may have soiled his hands with tuberculous expectoration.

Inoculation, or the penetration of tuberculous substance through the skin happens, perhaps, most frequently through injuries received while cleaning nicked or chipped glass or porcelain cuspidors which have been used by consumptives. It is also possible for the bacilli to enter the circulation if the person cleaning the spittoons happens to have a wound or open sore on his hands. Persons entrusted with the care of the spittoons in a private sick-room or an institution for consumptives should wear rubber gloves while cleaning these vessels.

At times the patient may inoculate himself by placing an accidentally injured finger in his mouth, or by carelessly soiling an open wound with his expectoration.

Physicians, students of medicine or of veterinary science, also butchers, etc., are exposed to the danger of wounding themselves with instruments which may have come in contact with tuberculous matter. Extreme care is the only remedy for all persons thus exposed.

I have thus far spoken only of the tuberculosis which manifests itself in the pulmonary form, that is to say, consumption of the lungs, of intestinal tuberculosis, or consumption of the bowels, and tuberculosis of



the skin, or lupus. But you must know that every organ in the body, such as the throat, the bones, and the coverings of the brain and spinal column may become invaded by the tubercle bacillus. In the last mentioned form the disease is technically called tuberculous meningitis.

After all that you have heard so far of the contagiousness, or rather the communicability of tuberculosis, and consumption in particular, I do not wish you to think that a breath accidentally taken in an atmosphere laden with bacilli would certainly render a healthy individual consumptive, or that by a swallow of tuberculous milk or a little injury from a broken cuspidor one must necessarily become tuberculous. The secretions of our nasal cavities, doubtlessly also the blood, and the secretions of the stomach of the healthy individual, have bactericidal properties, that is to say, they kill the dangerous germs before they have a chance to do harm. Therefore, healthy men and women should not have an exaggerated fear of tuberculosis, but should, nevertheless, not recklessly expose themselves to the danger of infection.

But who are the individuals who must be particularly careful so as not to be attacked by the almost ever present tubercle bacillus?

There are four classes of these persons: 1. Those who have a hereditary predisposition to consumption. 2. Those who have weakened their system and thus predisposed themselves to the disease by the intemperate use of alcoholic beverages, by a dissipated life, by excesses of all kinds, etc. 3. Those whose constitution has been weakened by disease (pneumonia, typhoid fever, smallpox, measles, whooping-cough, syphilis, influenza, etc.). 4. Those whose occupations, trades, or professions, such as printing, hat-making, tailoring, weaving, and all occupations wherein the worker is much exposed to the inhalation of various kinds of dust, render them particularly liable to consumption.

Before I proceed to give you a few of the essential points how to overcome such a predisposition to consumption, let me answer the question, which I believe I read in the minds of many of you, namely, "What about those who have a so-called hereditary consumption?" permit me to say that the popular notion concerning hereditary consumption is, in my humble opinion, absolutely erroneous. Consumption has, perhaps, never been inherited either from the father or the mother, but the child has usually been infected by its well-meaning but ignorant consumptive parents after birth. The mother has kissed the child, taken it into her bed, allowed it to use the same spoon or other utensils which she has used herself, and thus unconsciously has conveyed the disease to her infant. Through kissing and caressing a consumptive father the child may also be infected; or again, either the one of the other parent may have been careless with their expectoration, or may have spit on the floor where the child plays. It must be obvious to any thinking individual that if such uncleanly habits of the father or mother prevail the child born healthy is not liable to remain healthy long.

I have said that consumption is not hereditary, and children born of consumptive but intelligent and conscientious parents need not necessarily contract the disease. I myself have a number of times seen children of a consumptive parent grow up to be strong men and women; but their



parents were not only careful, clean and conscientious, they were also aware that while they did not transmit consumption to their children, they had transmitted to them a tendency or predisposition to this disease. This hereditary predisposition is, however, a condition which can be overcome by judicious training, proper food, plenty of outdoor exercise, and the avoidance of all excesses. All predisposed individuals should dress sensibly and according to the season. They should never wear garments which restrict circulation or hinder the free physiologic function of the chest or abdomen. Tight clothing, tightly laced corsets, tight neckwear, tight shoes, are all pernicious and particularly dangerous to the individual predisposed to tuberculosis.

A predisposition, whether inherited or acquired, may be explained as a peculiar weakened state of the system which offers a favorable soil for the growth and multiplication of the germs of consumption. I have already hinted at what should be the duty of the parents if they are themselves consumptive and fear to have transmitted to their offspring a predisposition to the disease. Concerning alcoholism and other intemperate habits, which are so often the forerunners of consumption, I desire to speak plainly. I do not wish to appear to you as a temperance lecturer, condemning all and everything which does not subscribe to the doctrines of the temperance party. I consider alcohol a medicine, at times indispensable in the treatment of certain diseases; but liquor as a beverage is never useful and nearly always harmful. Alcoholism must be considered the greatest enemy of the welfare of a nation, the most frequent destroyer of family happiness, too often the cause of the ruin of mind and body, and certainly the most active cooperator of the deadly tubercle bacillus.

To combat alcoholism (drunkenness or intemperance) education is required above all. Extreme prosecution and fanatical laws will do little good. From early childhood the dangers of intemperance and its fearful consequences should be taught. In schools and at home the drunkard should be pictured as the most unhappy of mortals. While the very moderate use of feeble alcoholic drinks, such as light beers, may be considered as harmless to adults when taken with their meals, alcohol should never be given to children, even in the smallest quantities.

In families in which there is a fear of hereditary transmission of the desire for strong drink, even the mildest alcoholic drinks should be absolutely avoided. It would also be best if all people so predisposed, or who may have acquired only the occasional desire for drink, should never smoke, for experience has taught that attacks of dipsomania (periodic sprees) are often caused by an excessive use of tobacco. The young man starting out in life should take with him the moral training which will enable him to be a gentleman, and be considered a polite gentleman, though he absolutely refuses ever to enter a liquor saloon in order to treat or be treated to drink. It is this treating habit—alas! so prevalent in our American society—which has ruined many a young man and made him a moral and physical wreck. Think of it, young ladies and gentlemen, you the future teachers of our boys and girls, what a glorious mission you have in thus combating two diseases of the masses—alcoholism and tuberculosis—at the same time. But you will not only be teachers but citizens as well, and as



such encourage the creation of tea and coffee houses where warm, non-alcoholic drinks, including bouillon, are sold in winter and cold ones in summer. It would be of additional advantage if some of these houses could also offer healthful amusements for old and young. Temperance societies, which through tactful and intelligent propaganda help to combat the fearful evil of alcoholism should receive encouragement from everybody.

There is another point I wish to emphasize in regard to alcohol and tuberculosis, and that is the idea that alcohol is a specific, or even a remedy for consumption. There has never been a greater mistake made. Alcohol has never cured and never will cure tuberculosis. It will either prevent or retard recovery. It is like a two-edged weapon; on one side it poisons the system and on the other side it ruins the stomach and thus prevents this organ from properly digesting the necessary food. Truly pathetic are the results of this erroneous doctrine in the families of the poor, where, instead of procuring good nourishment for the invalid, liquor has been bought in far too large quantities, so that often there was not enough money left for food for the sufferers nor for the other members of the family.

The individual enfeebled by disease, such as typhoid fever, grip, etc., should lead a particularly careful life and avoid crowded meeting places and all localities where the air is vitiated and where he is in danger of coming in contact with careless or ignorant individuals who expectorate everywhere. The man who has a trade, such as the printer, tailor, book-keeper, or other workers whose occupations are more or less predisposing to tuberculosis, can counteract this tendency by leading a sober life, and when not at work, spending as much time as possible in the open air, by breathing deeply and keeping the body in a thoroughly good condition through regular bathing and judicious exercise.

Thus, if you are perchance in the presence of a consumptive who is not yet under medical care, teach him what you know of the prevention of the disease and advise him to seek the counsel of a competent physician. If he is too poor to pay for a consultation, and too proud to ask it for nothing, tell him to apply to the Health Department which will send him one of its physicians without cost. No tuberculous invalid, no matter in what stage of the disease, whether living in a palace or in the poorest tenement house, should be without a medical adviser. If you meet a consumptive who is ignorant of the precautions he should take, do not shun him like a leper, but treat him with kindness and convince him that whatever he does to prevent the spread of the disease among others will also improve his own condition and increase the chances of his recovery. Let me tell you that a clean, conscientious consumptive is as safe a person to associate with as anybody.

There should always be ample ventilation in your class rooms. The vitiated atmosphere in the class room is as pernicious to you as it is to the children under your charge. Some of you, nay, let me hope, all of you, except those who give up their career for vital reasons, will be superintendents of schools, or become so influential that to arrange the curriculum will be one of your tasks and privileges. I beg you, when once in



command, not to forget that physical exercise, outdoor life, and when indoors, as much fresh air as possible are most essential to the normal development of the child. There is too great a tendency in the present age to develop the intellect of our children to the detriment of their physical welfare. While all the organs of the body should be developed, the lungs particularly should be given opportunity to develop to a greater advantage. I would suggest that breathing exercises should not only be given now and then but that they should form an important item in the curriculum of all the schools. I do not believe that there is any better, greater, and more efficacious barrier to becoming consumptive than a good pair of lungs, and it would seem to me that it should not only be a great duty but also a great privilege and pleasure to make out of a weak-lunged child, who may be predisposed to tuberculosis, a strong and vigorous man or woman.

I do not know what system of breathing exercises you have been taught, but if you will permit me I will demonstrate to you those which I have found most valuable in my work among families where I had some apprehension as to the children becoming consumptive. In fact, I teach these exercises wherever and whenever I can, for I think they do good even to a well person, and with some modification I teach them also to my consumptive patients.

In front of the open window, or out of doors, assume the position of the military "attention," heels together, body erect, and hands on the sides. With the mouth closed take a deep inspiration (that is, breathe in all the air possible), and while doing so raise the arms to a horizontal position; remain thus holding the air inhaled for about three to five seconds, and while exhaling bring the arms down to the original position. This act of exhalation, or expiration, should be a little more rapid than the act of inspiration. When this first exercise is thoroughly mastered and has been practised for several days, one may begin with the second exercise, which is like the first, except that the upward movement of the arms is continued until the hands meet over the head.

Of course, when out of doors one cannot always take these exercises with the movement of the arms without attracting attention; under such conditions raise the shoulders, making a rotary backward movement during the act of inhaling; remain in this position, holding the breath for a few seconds, and then exhale while moving the shoulders forward and downward, assuming again the normal position. This exercise can easily be taken while walking, sitting, or riding in the open air.

The following general rule concerning breathing exercises should always be remembered: Commence with the easier exercises and do not begin with the more difficult ones until the former are completely mastered. For healthy school children I would suggest to take from six to nine deep respiratory exercises, either of one kind or the other, every hour.

A second general rule is never to take these exercises when tired, and never to continue them so long as to become tired. It is, of course, self-understood that these exercises should always be taken in an atmosphere as pure, fresh, and free from dust as possible, and that no restricting garments around the waist or neck should be worn. You as teachers should know that constricting the chest or abdomen will often leave lasting



injuries to the vital organs incased in the thoracic and abdominal cavities.

In teaching the children under your charge how to breathe, sit, stand, and walk properly, you teachers do perhaps more toward the prevention of tuberculosis than all we physicians together. I would love to see singing and outdoor recitations at proper seasons incorporated in the curriculum of every school in city or country, and city schools should have commodious roof-gardens for the purpose. Wherever there is a play-ground it should be kept clean, as free from dust as possible, and be daily strewn with clean sand or gravel. Children should be warned not to expectorate on the playground, and adults should be severely punished by law for so doing.

The breathing exercises at school should, of course, be supervised by teachers. Modern school hygiene, particularly in the United States, is far superior to what it has been in the past, yet there is still room for improvement. So far as the prevention of tuberculosis is concerned, permit me to suggest to you the advisability of giving the children leaflets of instruction. I know this practice to be in vogue in some schools in this and other States, but those I have seen seemed rather incomplete. Let me give you here a tentative leaflet which I have written with the particular view of preventing consumption.

Every child and adult can help to fight consumption. School children can be helpful by complying with the following rules:

Do not spit, except in a spittoon or a piece of cloth or a handkerchief used for that purpose alone. On your return home have the cloth burned by your mother, or the handkerchief put in water until ready for the wash.

Never spit on a slate, floor, sidewalk, or playground.

Do not put your fingers into your mouth.

Do not pick your nose or wipe it on your hand or sleeve.

Do not wet your finger in your mouth when turning the leaves of books.

Do not put pencils into your mouth or wet them with your lips.

Do not hold money in your mouth.

Do not put pins in your mouth.

Do not put anything into your mouth except food and drink.

Do not swap apple cores, candy, chewing gum, half-eaten food, whistles, bean blowers or anything that is put in the mouth.

Peel or wash your fruit before eating it.

Never cough nor sneeze in a person's face. Turn your face to one side and hold a handkerchief before your mouth.

Keep your face and hands and finger nails clean; wash your hands with soap and water before each meal.

When you don't feel well, have cut yourself, or have been hurt by others, do not be afraid to report to the teacher.

So far we have spoken of the duties in the actual prevention of the disease. What can we do for its cure?



# BULLETIN

## OF THE

# MISSOURI STATE BOARD OF HEALTH

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**VOL. I.**

**MARCH, 1904.**

**NO. 3**

### SENATE BILL No. 346.

Senate Bill Number 346 was introduced into the 42nd General Assembly by Senator Morton at the request of the Missouri State Board of Health. The secretary of the Board made an earnest plea to the Senate Committee to recommend this, from the fact that our local Boards of Health were very inefficient and it was impossible for us to do the amount of good to the general public of the state except by specific legislation.

We herewith reprint this bill and ask all local Boards of Health and the physicians throughout the state to offer any suggestions that they may see proper.

To amend article I of chapter III of the Revised Statutes of Missouri of 1899, entitled "Health, board of," as amended by act approved January 25, 1901, by adding thereto eight new sections, to be known as sections 7529b, 7529c, 7529d, 7529e, 7529f, 7529g, 7529h and 7529i, and declaring an emergency.

Be it enacted by the General Assembly of the State of Missouri, as follows:

Section 1. Article I of chapter III of the Revised Statutes of Missouri of 1899, as amended by act approved January 25, 1901, is hereby amended by adding thereto eight new sections, to be known as sections 7529b, 7529c, 7529d, 7529e, 7529f, 7529g, 7529h and 7529i, and which shall read as follows:

Section 7529b. There shall be established in each city, village or incorporated town in this state a board of health; such board shall be com-



posed of five members, unless otherwise provided by the charter of such city, village or incorporated town; the mayor, by virtue of his office, shall be president of said board of health; the mayor, with the advice and consent of the common council, shall create the board of health and fix the salary and term of office of the executive officer and such salary and other expenses incurred in maintaining said board shall be paid by such city, village or incorporated town. One member of this board shall be a physician in active practice and a resident of such city, village or incorporated town and shall be the executive officer of said board of health. In villages or incorporated towns the trustees or mayor and aldermen may appoint a health officer instead of a board of health, and fix his salary and term of office, who shall have all the powers and perform all the duties granted to or imposed upon boards of health. If any city, village or incorporated town shall fail or refuse to establish therein a board of health or appoint a health officer for such city, village or incorporated town, and fix his salary and term of office; and such health officer shall have the same powers and duties as health officers appointed in villages and incorporated towns in lieu of a board of health, as herein provided, and the salary of such health officer, as fixed by the State Board of Health, and all necessary expenses incurred by him in performing the duties of a board of health shall be paid by and be a valid claim against the city, village or incorporated town for which such health officer is appointed to serve.

Section 7529c. The said Boards of Health shall have the power and authority to make and enforce rules and regulations for the collection and record of all births and deaths occurring within their respective jurisdictions subject to the approval of the State Board of Health.

Section 7529d. The local boards of health herein provided shall serve two years and until their successors shall be elected or appointed and qualified.

Section 7529e. The said boards of health shall meet within ten days after the passage and approval of this act, and shall organize by electing one of its members president; and they shall also elect a secretary, who shall be a resident of the city, village, incorporated town or county; and the said boards shall meet quarterly thereafter and as such other times as they may deem necessary. Such boards in cities, villages, incorporated towns and counties shall collect and preserve records of all births and deaths occurring within their respective jurisdiction, and shall report the same monthly to the secretary of the county board of health hereby established. The secretary of the board shall be the custodian and registrar of the records of births and deaths occurring within the jurisdiction of said



board. The county board of health shall report the births and deaths occurring within the county once every three months to the secretary of the State Board of Health.

Section 7529f. Every physician or other person called to attend any person who is suffering from smallpox, cholera, plague, yellow fever, typhus fever, typhoid fever, diphtheria, membranous croup, scarlet fever or any other disease dangerous to the public health, or required by the State Board of Health to be reported, shall report the same to the health officer within whose jurisdiction such person is found, giving in such report the name, age, sex and color of the patient and the house or place in which such person may be found; and in like manner it shall be the duty of the owner or agent of the owner of a building in which a person resides who has any of the diseases herein named or provided against, or in which are the remains of a person having died of any such disease, and the head of the family, immediately after becoming aware of the fact, to give notice thereof to the health officer; and when complaint is made or a reasonable belief exists that an infectious or contagious disease prevails in any house or other locality which has not been reported as hereinbefore required, the board shall cause such house or locality to be inspected by its health officer, and on discovering that such infectious or contagious disease exists, the board may, as it deems best, send any person so diseased to a quarantine hospital or other place provided for such persons or may restrain them and others exposed within said house or locality from intercourse with other persons, and prohibit ingress and egress to or from such premises. Any violation of the provisions of this section shall be deemed a misdemeanor and the offender upon conviction shall be punished by a fine of not less than twenty-five dollars nor more than one hundred dollars for each offense.

Section 7529g. The board of health shall create a complete and accurate system of registration of births, deaths and interments occurring within its jurisdiction, for the purpose of legal and genealogical investigations, and to furnish facts for statistical, scientific, and sanitary inquiries; and no corpse shall be buried or cremated within the state of Missouri, or taken out of the state, without a permit from the board of health where the death occurred, and before granting such permit the board of health, if the corpse is to be transported beyond its jurisdiction, shall receive from the undertaker or person in charge of the corpse a written certificate, certifying that it has been prepared in accordance with the rules of the State Board of Health, and any person wilfully making a false statement relative to the preparation of a corpse shall be deemed guilty of a misdemeanor and shall be punished by a fine of not less than twenty-five dollars and not more than two hundred dollars; and no sexton, superintendent, or other



person in charge of any cemetery, burial grounds or crematory shall receive a corpse for burial, or cremation, unless accompanied with the permit of the board of health provided for herein, and no common carrier, its agent, conductor or other employee shall receive for conveyance, or convey the remains of a deceased person without having first complied with such regulations as shall be made by the State Board of Health.

Section 7529h. It shall be the duty of every physician who is attending a person affected with smallpox, yellow fever, typhus fever, diphtheria, membranous croup, or scarlet fever, when such person has recovered and is no longer liable to communicate the disease to others or has died, to notify the proper board of health of such recovery or death as in this act provided, and as soon thereafter as the board deems it advisable its health office or other person appointed for that purpose shall thoroughly disinfect and purify the house and contents thereof in which such person has been ill or has died, which disinfection and purification shall be done in accordance with the rules and regulations adopted and promulgated by the State Board of Health, and the local board of health may purchase such disinfecting apparatus and supplies as it deems necessary for such purpose; and upon the request of the owner or occupant of any dwelling or house, or the head of any family, the board of health shall purify and disinfect any house which has been occupied by any person suffering from pulmonary tuberculosis, commonly called consumption, or in which any person has died from said disease; the expense of disinfection shall be paid by the local board of health. When a house or other place is quarantined on account of contagious disease it shall be the duty of the board of health having jurisdiction thereof to provide for all persons confined in such house or place, food, fuel, and all other necessities of life, including medical attendance, medicine and nurses, when necessary; the expenses so incurred, except those for disinfection, quarantine, or other measures strictly for the protection of the public, when properly certified by the president and secretary of the board of health, or health officer where there is no board of health, shall be paid by the person or persons quarantined, when able to make such payment, and when not, by the city, village, incorporated town or county in which he or they were quarantined.

Section 7529i. Any person or persons violating any order or regulation of the board of health made in pursuance of the provisions of this act, or who shall obstruct or interfere with the execution of any such order, or wilfully or illegally omit to obey any such order, shall be fined in a sum not less than twenty-five dollars and not more than one hundred dollars, or shall be imprisoned for not less than ten nor more than ninety days, or shall be punished by both such fine and imprisonment; but no person shall



be imprisoned under this section for the first offense, and the prosecution shall deemed a first offense, unless the affidavit upon which the prosecution is instituted or based contains the allegation that the offense is a second or repeated offense.

Sec. 2. All acts and parts of acts inconsistent with the provisions of this act are hereby repealed.

Sec. 3. The necessity of having duly authorized boards of health in the state co-operating with the State Board of Health, and providing for the registration of births and deaths creates an emergency within the meaning of the constitution of the state of Missouri, and, therefore, this act shall take effect and be in force from and after its passage.

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### **RULES FOR DYSPEPTICS.**

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1. Eat slowly, masticating the food very thoroughly, even more so, if possible, than is required in health. The more time the food spends in the mouth, the less it will spend in the stomach.

2. Avoid drinking at meals; at most take a few sips of warm drink at the close of the meal, if the food is very dry in character.

3. In general, dyspeptic stomachs manage dry food better than that containing much fluid.

4. Eat neither very hot nor cold food. The best temperature is about that of the body. Avoid exposure to cold after eating.

5. Be careful to avoid excess in eating. Eat no more than the wants of the system require. Sometimes less than is really needed must be taken when digestion is very weak. Strength depends not on what is eaten, but on what is digested.

6. Never take violent exercise of any sort, either mental or physical, either just before or just after a meal. It is not good to sleep immediately after eating, nor within four hours of a meal.

7. Never eat more than three times a day, and make the last meal very light. For many dyspeptics two meals are better than more.

8. Never eat a morsel of any sort between meals.

9. Never eat when very tired, whether exhausted from mental or physical labor.

10. Never eat when the mind is worried or the temper ruffled, if possible to avoid doing so.



11. Eat only food that is easy of digestion, avoiding complicated and indigestible dishes, and taking but one to three kinds at a meal.

12.1 Most persons will be benefited by the use of oatmeal, wheat meal, cracked wheat, and other whole-grain preparations, though many will find it necessary to avoid vegetables, especially when fruits are taken.—Public Health Journal.

Statistics show that the average amount of sickness in human life is ten days in every year, or two whole years in an average lifetime. From the economic standpoint alone, this is a serious matter, for estimating the average daily wage at two and a half dollars per day, the loss in revenue alone amounts to \$1,566 per annum, and it is a very conservative estimate to appraise medical attendance and medicines at a like amount, when we have a total yearly financial loss of over three thousand dollars. But who can estimate the loss to the individual in physical and mental suffering, and not only to the person immediately concerned, but to the other members of the family? Of course, the wage loss only applies to the workers, but it is safe to say that in the case of the non-workers it is fully balanced by the medical expenses, which we have placed absurdly low. And to think that most of this loss is due to preventable causes. The pity of it. It is true that some are surgical cases, due to accident, but they are a trifling minority compared with the vast array of physical ills from which humanity suffers. A very large proportion of the cases demanding surgical interference are due to errors in living, and might be obviated by proper attention to the laws of health. What a comment upon our boasted civilization! Think what it would mean to this country alone, if the preservation of health was made a national affair! Think of the billions of dollars that would be saved to the people, and the consequent comforts they would be enabled to enjoy! And think of the misery they would be spared! True, the drug stores would suffer, but the vast majority would benefit, and the greatest good of the greatest number is the object of all good government. Perhaps the day will yet come when a proper understanding of the human body and its needs will form a part of the curriculum in every school—when the sole duty of the physicians will be, to teach the people how to preserve their health, and when that day shall come, the long looked for millennium will be close at hand.—Health, July, 1901.



### DIPHTHERIA.

In our attempts to prevent the continued outcropping of diphtheria in our homes and schools, we find that there are a few points not generally known or ignored, which we consider worth mentioning in a bulletin of this nature.

Diphtheria is a term now restricted to a disease caused by a specific rod-shaped organism of characteristic appearance, known as the *Bacillus Diphtheriae* of Klebs-Loeffler. It was formerly used as a name for certain clinical symptoms, regardless of cause, especially since the cause was not then known. Now it is acknowledged that this same germ, the Klebs-Loeffler bacillus, may cause a variety of symptoms from a slight catarrhal condition to a severe membranous croup, which may be fatal in a very short time. It is important to remember this, for a patient suffering from a slight catarrhal condition of the pharynx, larynx or even nares, may be the focus of an epidemic of very serious character, for this person may go about spreading the deadly germs broadcast. These germs, like most pathogenic germs, vary in their virulence, the severer cases as a rule harboring the more virulent germs; but this does not follow in all cases, and hence a mild case may be as dangerous to the public as a most virulent one. "Very important factors in the spread of diphtheria are persons having the very mildest form of diphtheria, or those suffering from Rhinitis pseudomembranacea, or convalescents who may harbor on their mucous membranes, virulent diphtheria bacilli.—Weiehsebaum.

Physicians, recognizing the contagiousness of the disease, have for a long time recommended that the patient be isolated for a certain length of time after convalescence. This period of time has been rather arbitrarily fixed by different authorities for different lengths of time. In certain cases such a period may be unjust and work a hardship, while in others it may be necessary to lengthen this period of isolation for a great number of days. The germs may disappear from the throat and mouth of convalescent in a few days or it may remain for weeks or even months. Thus, one readily sees the importance of a correct bacteriological diagnosis and especially the microscopical affirmation of the absence of virulent diphtheria bacilli from the throat and nose of a convalescent, before he is turned loose to mingle with the helpless public.

Where the physicians and sanitary officers of Missouri have no local laboratories, the State Board of Health laboratory at Columbia offers its facilities for assistance in these matters. A disease which may appear clinically as true diphtheria, may not be such in the modern sense, but may be



due to other organisms, such as the streptococcus, or staphylococcus pyogenes. According to a collection of 878 diphtheria-like cases made by Loeffler from a number of authors, 316 cases or more than one-third were found on examination, not to be diphtheria at all. Hence the antitoxin used can be effective in only those cases in which it is specific, *i. e.*, the proper one.

It is hardly necessary to add that every object which comes in contact with the patient or the attendants, may be media for conveying the disease to others. It follows that there must be a proper isolation of the patient and a thorough disinfection of all articles before leaving the isolated rooms, as well as the rooms themselves, when it is shown that the patient can be allowed to go abroad again without danger to the public.

In some future bulletin we hope to give in detail the proper method of isolation and subsequent disinfection in cases of infectious or contagious diseases.

A. J. DETWEILER, M. D.,  
State Pathologist and Bacteriologist.

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### HYGIENE OF THE FARM.

By HARVEY B. BASHORE, M. D., Inspector of Pennsylvania State Board of Health.

We have all gotten the idea, or at least we used to have, that farm and country life was just about the ideal thing, and that farming was the ideal business. In some respects it is, but it does not quite come up to the sanitary standard, and for that reason it is worthy of attention, for it should be our endeavor to make it as healthful as possible, since on the farming population depends the stability of the country. Then, again, both in town and country, we are apt to get a little careless about human life, and to think that disease is the gift of an all-wise Providence, instead of the result of our own carelessness. It has been said that a dead cow will attract the attention of any government on earth more quickly than five dead men or fifteen dead children. Perhaps this is so, and if it is, it has a very good explanation in the fact that cattle are readily convertible into cash, whereas human life is not, and anything which affects us in a matter of dollars and cents is very quickly noticed—such is human nature.

A very interesting example on this line came to my attention at one of the institutes last year. A certain farmer had four of his family in bed with typhoid fever. The doctor advised closing the well and getting water



elsewhere. This he refused to do. Finally his cows became sick and the veterinarian, taking his cue from the physician, recommended closing the well to save the rest of the stock. The well was closed.

It is absurd to think that this man cared less for his family than he did for his stock; but the fact that dollars and cents were slipping away quickened his perception.

"But is the country really unhealthful?" somebody asks. Here are some facts: The death rate is lower, both in town and country, than ever before; the greater decrease has been in the cities. In Connecticut, for example, during the last ten years the city mortality has dropped from 20 to 17 per 1,000, while the rural only from 17 to 16 per 1,000. In Massachusetts the difference has been still less, and in New York state and rural mortality rate has actually increased. Pennsylvania statistics are incomplete, yet in the beautiful Cumberland Valley, just across the river from Harrisburg, with a rural population of only one hundred to a square mile, there was last year just as much typhoid fever as in the capital city itself, with a population of ten thousand to a square mile. This is a very poor showing, indeed, for the country. But Michigan beats it, with a record in some districts of twenty times as much typhoid in the country as in the neighboring cities. This is the kind of story that figures tell about rural hygiene; and this is the reason why we have been asking our legislators for better sanitary laws.

Taking these conditions, then, as they exist today, we shall have to admit that there must be much room for sanitary improvement about the ordinary farm; and in the absence of state or county supervision we have to make all this improvement ourselves. On the individual farmer, in this state, at least, rests the question whether he is to live in a healthful place or not.

When we come to take a sanitary view of the farm, the first point of interest, of course, is his house. This, like any other house, should have a clean, dry cellar; and the rooms in the house should have plenty of air and sunlight. Sunlight, I know, fades carpets, but faded children are worse. The abundant fresh air of the country will not compensate for faulty house construction.

The heating of country houses should be looked after more carefully than is customary. The method of heating, which is almost always that of stoves, is in itself defective, and little can be done to remedy it, unless the rooms have open fireplaces. If these are kept open instead of being closed, as I have frequently seen, you will get much more effect heating and much better ventilation.



The next point which requires attention, and the one in which occurs the greatest defect, is the water supply, though it comes from a well or a spring. This may seem very strange to you, yet it is a proved fact that fifty per cent, at least, of all farm wells are grossly polluted and the water unfit to drink. It is hard to give up our sentimental ideas about the "moss-covered well" and the "old oaken bucket;" harder yet to give up our ideas of purity about the old spring; but the fact that we have so many epidemics of typhoid fever occurring in isolated farmhouses—three, four and five cases sometimes in one family—goes far to show the bad character of the water.

"But," you will say, "granted that our wells and springs are polluted, what are we going to do about it? We must have water and there is no other way to get it." One way to remedy this is to use rainwater collected in a very carefully made cistern, but a better way, to my mind, is to remove the source of pollution, and this source, in the country, is almost always one thing—the old-fashioned country privy. This should be abolished—the pit filled up and a dry closet substituted. A dry closet consists simply of a pail, a seat and a receptacle for dry earth or sifted coal ashes. When the pail is filled the contents should be emptied on cultivated land. If near the house, earth should be raked over the pile, but if at all distant this is not actually necessary. Sunlight and the germs in the upper layers of the soil—the nitrifying bacteria, they are called—soon dispose of all danger from such filth.

Some one may complain that a dry closet takes time. So it does, just one and one-half minutes per day is the actual time record of an earth closet in a family of five. Surely any one can afford that much time. Another way is to have a cemented pit, throw earth into this every day, and every month or so remove the contents to the fields. All privies and earth closets must, of course, have tightly fitting covers, so as to exclude flies.

Another thing to be gotten rid of is the slop and waste water. In the city this goes into the sewer. In the country it generally goes out the kitchen door and helps to pollute the soil and the well, and thus becomes a disturbing factor of health, not only from poisoned water, but also from polluting the atmosphere by evaporation.

In the absence of sewers the proper way to dispose of slop waters, is by some form of a surface or subsoil drain, allowing the filthy waters to drain over or under cultivated land. Cultivated land, by the way, is the great sewer in the country, yet it is even better than a sewer, for it



not only removes filth, but actually destroys it.

The garbage or solid waste from the kitchen, if not fed to the pigs, should be put in a furrow in a field or a hole in the garden bed. The sum and substance of the sanitary disposal of all putrescible waste about a country house is its speedy removal to cultivated land.

When we come to the "outbuildings" on the farm—the pigpen, the barn-yard and the cowstable are the attractive, rather, I suppose I ought to say, the unattractive, points from a sanitary viewpoint.

Pigpens should have a water-tight floor, with an air space of at least a foot underneath, and to keep them in proper condition so as not to become a nuisance they should be cleaned every day and the filth carted away to the field.

The filthy barnyard—an eyesore to many an otherwise fine farm—is a great point for improvement, not only on account of its unsightliness, but on account of the adjacent soil pollution and the fact that stable refuse is a breeder of flies; and the flies are well known to be carriers of disease germs. At the Agricultural Department, Washington, some experiments made on screening manure piles show that flies diminished very rapidly in the immediate locality. But, as such a procedure is not feasible on the farm, a better if not, indeed, the only way, is to cart away the manure immediately to the field, as my friend, Mr. Stout, of Pinegrove, has been doing for the last fifteen years, instead of allowing it to accumulate and putrify in the barnyard. This is its proper place, and the sooner it is gotten there the better, not only in a sanitary sense, but for economic reasons, for the nitrogen, instead of being wasted, gets into the soil, where it is needed.

However, much we may desire to rid our homes of flies, the removal of mosquitoes is vastly more desirable, for one family of mosquitoes, and especially the family that breeds in the country and suburban places, carries the germ of malarial fever, which, though not especially dangerous in this part of the world, is, nevertheless, a disease to be prevented. The rail barrel, the cistern and the country privy are the great mosquito-breeding places; although the malarial variety quite often prefers the roadside puddle and the pools of the little streams. To diminish the mosquitoes, then, of a locality it is necessary to drain or fill all swampy places, to screen the cistern and rain barrel and to put two or three ounces of kerosene oil in the privy every few weeks. Inasmuch as mosquitoes do not stray far from home, but are "born and bred" where they are, it becomes a very easy thing to eliminate them in an isolated place; in a



town, unless everybody falls in line, it is a different story.

The cow stable is another point which directly affects the farm people, and sometimes other people who don't live on the farm. Cows are very prone to tuberculosis, and although there has been much discussion lately as to the interchangeableness of bovine and human tuberculosis, the weight of opinion at present favors the idea of the transmission of tuberculosis from cattle to man.

Damp, dark, filthy and unventilated stables predispose to the disease; and to prevent it, cleanliness should be enforced. There also should be an abundant supply of fresh air and sunlight. Some other diseases, such as typhoid fever, diphtheria and scarlet fever, have been traced to polluted milk; and in the great cities the terrible infant mortality in summer has been attributed to the same cause. So, even if we eliminate tuberculosis as one of the results of filthy milk, there is still enough danger left to stimulate us to use every precaution with regard to other diseases. In order, then, to have good, pure and healthful milk we must, of course, have good cows to start with, and they must be housed in clean, airy stables, and after this the whole secret is persistent cleanliness. The milkers should be clean, but they do not necessarily need to be dressed in white duck. There are only three things necessary, by the way, for cleanliness, and these are soap, water and inclination, and the greatest of these is inclination. The milking utensils must, of course, be clean—plain, open pails and a new cheese-cloth strainer, which should be burned up after each use. Cooling the milk is the next most important thing—the whole future of the milk depending upon it, especially if it is intended for transportation. The great difficulty about this is that the chilling to be effective must get to forty-five degrees, whereas the springs which are generally used for this purpose are not below fifty degrees, consequently ordinary milk “turns” very speedily.

The time is fast coming when people everywhere will demand better and purer milk, but, of course, the price will be proportionately higher—high enough at least to pay for the extra care.

One other subject I wish to speak about, and that is the spread of contagious diseases from farmhouses. Since our laws for the rural districts are very lax in this regard, we should ourselves use every endeavor to prevent the spread of these diseases. Those who sell milk should use special precaution, for they may otherwise scatter disease far and wide; and although there may be no compulsion in the matter we should follow the golden rule and save others unnecessary trouble.



Such are some of the methods that are necessary if the farmer or the isolated rural dweller would live in a canitary home, but some one asks, "Does it pay, Is it worth while to go to all this trouble?" Suppose you yourself get typhoid fever because you have been drinking from a polluted well; suppose your own wife gets tuberculosis because she has been drinking milk from a sick cow; suppose your own child gets diphtheria because somebody else is careless—if all of these happen, or if any one of them happens, I think you will agree with me that it does pay and vastly pay, to have hygiene on the farm.

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### SENATOR VEST'S TRIBUTE TO THE DOG.

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One of the most eloquent tributes ever paid to the dog was delivered by Senator Vest, of Missouri, some years ago. He was attending court in a country town, and while waiting for the trial of a case in which he was interested was urged by the attorneys in a dog case to help them. Voluminous evidence was introduced to show that the defendant had shot the dog in malice, while other evidence went to show that the dog had attacked defendant. Vest took no part in the trial and was not disposed to speak. The attorneys, however, urged him to speak. Being thus urged he arose, scanned the face of each jurymen for a moment, and said:

"Gentlemen of the jury: The best friend a man has in the world may turn against him and become his enemy. His son or daughter that he has reared with loving care may prove ungrateful. Those who are nearest and dearest to us, those whom we trust with our happiness and our good name, may become traitors to their faith. The money that a man has he may lose. It flies away from him, perhaps when he needs it most. A man's reputation may be sacrificed in a moment of ill-considered action. The people who are prone to fall on their knees to do us honor when success is with us may be the first to throw the stone of malice when failure settles its cloud upon our heads. The one absolutely unselfish friend that man can have in this selfish world, the one that never deserts him, the one that never proves ungrateful or treacherous, is his dog. A man's dog stands by him in prosperity and in poverty, in health and in sickness. He will sleep on the cold ground, where the wintry winds blow and the snow drives fiercely, if only he may be near his master's side. He will kiss the hand that has no food to offer; he will lick the wounds and sores that some in encounter with the roughness of the world. He guards the sleep of his pauper master as if he were a prince. When all other friends desert he remains. When riches take wings and reputation falls to pieces he is as constant in his love as the sun in its



journey through the heavens. If fortune drives the master forth an outcast in the world, friendless and homeless, the faithful dog asks no higher privilege than that of accompanying him, to guard against danger, to fight against his enemies. And when the last scene of all comes, the death takes the master in its embrace, and his body is laid away in the cold ground, no matter if all other friends pursue their way, there by the grave side will the noble dog be found, his head between his paws, his eyes sad, but open in alert watchfulness, faithful and true even in death."

Then Vest sat down. He had spoken in a low voice, without a gesture. He made no reference to the evidence or the merits of the case. When he finished judge and jury were wiping their eyes. The jury filed out but soon entered with a verdict of \$500 for the plaintiff, whose dog was shot; and it was said that some of the jurors wanted to hang the defendant.—Nashville American.

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### LOCAL BOARDS OF HEALTH.

I often hear persons afflicted say, "your Health Board is interfering with my rights as a citizen of this free government; you are sending your local physician to quarantine my home, forbidding ingress and egress, my business interests suffering, my children kept from school; etc."

No matter how free and liberal a government may be formed, government is necessary to control; control implies a surrender of some of our rights; you cannot form a compact with your neighbor without a surrender—a mutual surrender of rights for mutual preservation; this implies mutual protection of all unsundered rights and enforcement of all surrendered rights, with a body of some kind to enforce and be a final appeal. For convenience, in all matters pertaining to public health, we speak of the controlling body in such a case as a Board of Health, having control of all matters that would prolong human life and mitigate human suffering. What higher prerogative could a government have than to protect the lives of her subjects? This is the greatest reason why government is formed. This carries with it Boards of Health, in this country. Local, State and National Boards of Health, each supreme within their sphere.

The compact between the States implies surrender of rights, and when a State is admitted into the Union of States, those already in have a right to know her organization; to know that that organization is protective of human life. There must be a manifestation of intelligence to protect her own



citizens and thus protect other states before entering into this mutual compact of States.

Thus to bring the matter home, you reduce all contagious and infectuous disease down to individuals with a local health officer in control—mutual protection; facilitating and making safe our commercial relationship with the world.

Hence, the advance of Science, Medical Science, has opened up a new field as to sanitation. The ship laden with cholera germs can be anchored in harbor, disinfected, made clean and in a few days be reloaded and sail out upon the high seas.

To come to our homes; we often see school houses placarded, "Closed on account of Scarlet Fever, etc." With an efficient local health officer, the unfortunate child could have been quarentined at home, and inspected and returned to the school-room that had long ago been cleaned and disinfected when the first case broke out, made safe. If society has a right to imprison a vicious man, thus protecting say one human life, how much greater the necessity of protecting large bodies of persons, especially innocent children, from contagious diseases.

#### HOW COLDS ARE TAKEN.

A person in good health, with fair play, easily resists cold, but when the health flags a little and liberties are taken with the stomach or with the nervous system, says the London *Lancet*, a chill is easily taken, and, according to the weak spot of the individual, assumes the form of a cold or pneumonia, or it may be jaundice. Of all causes of cold, probably fatigue is one of the most efficient.

A jaded man, coming home at night from a long day's work, a growing youth losing two hours' sleep over evening parties two or three times a week, or a young lady heavily "doing the season," young children overfed and with short allowance of sleep, are common instances of the victims of 'cold.'

Probably many chills are contracted at night or at the fag end of the day, when tired people get the equilibrium of their circulation disturbed by either overheated sitting or underheated bed-rooms and beds. This is specially the case with elderly people. In such case the mischief is not always done instantaneously, or in a single night. It often takes place insidiously, extending over days or even weeks.—*Clipping.*



**The Missouri State Board of Health will hold their next examination at Kansas City, Mo., April 12th, 13th and 14th, in the University Medical College. The following week the Board will hold another examination at St. Louis, Mo., April 19th, 20th and 21st, 1904, in the St. Louis University, (Marion-Sims-Beaumont Medical College).**

**All those desiring to take the examination should make application to the Secretary for blanks, and get their applications in at least ten days prior to the examination.**



# **BULLETIN**

## **OF THE**

# **MISSOURI STATE BOARD OF HEALTH**

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W. F. MORROW, M. D., Secretary, Kansas City, Mo.	

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**VOL. I.**

**APRIL, 1904.**

**NO. 4**

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### **WATER ANALYSIS**

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#### **Tests of Some of the Drinking Water From Different Missouri Towns.**

IN OUR Laboratory at Columbia we have begun investigations of the water supplies of our citizens throughout the state. We have not limited our investigation to city supplies but have investigated springs, wells, and even cisterns on request. In this bulletin we have published only those analyses which concern cities and towns. We have not investigated all the municipal supplies, but decided to publish those which we have. In bulletins we will not criticise any water supplies, nor make any commendations or suggestions. Criticisms and suggestions will be sent directly to the people interested without publicity beyond the town or people concerned. However we publish a few of our city supplies side by side, so that the different towns may compare their public supplies with that of other towns in our state, and thus discover wherein the water is good or bad. For assistance in comparison, I shall briefly discuss each point brought out in these analyses. I have also appended the analyses of several of the large cities of this nation to assist us in drawing conclusions. However, one must be cautioned not to form any opinion without a thorough study of all the conditions present at the source as well as all the information from the analyses. An analysis per se cannot always decide the question for us. Every water must be studied in relation with its source, and only in this way can one come to a proper conclusion. In many cases several analyses at different times are required before any definite opinion can be given. Before we thoroughly understand the water supply and possibilities of a certain locality, this locality must be thoroughly studied. Hence the necessity of analyses of the normal waters throughout the



state. When we have once determined the normal analyses of the different waters, then we can easily determine their departure from the normal, which in the case of water means pollution with animal excretion, factory refuse, etc.

Therefore the importance of repeated analyses not only of those waters in use, but also those which may be used for public supplies in later years. We intend to continue this work as time and money will permit. There is no law in this state governing this matter. These analyses and suggestions are made by request.

At the present time because of lack of funds for the laboratory, we charge a fee of Five Dollars for each water analysis. This water must be collected and shipped in a certain way to get accurate results. Hence in each case before sending water for analysis, write for specific instructions. In our laboratory we also carry on other investigations, which we hope to extend according to time and opportunity. Examination of diphtheria material is made free of charge; examination of sputum for tubercle bacilli for One dollar, etc. Other charges are made for other examinations and material according to its nature and expense involved. We soon hope to see the fees lowered to the cost of postage.

The safest water in a village, town, or city is a common supply, which supply can then be investigated and controlled. Private wells or cisterns can never be regarded as safe drinking water. The ways in which a cistern or well may become polluted are so numerous that I will not attempt to enumerate them.

It goes without saying that a good water should be clear, colorless, odorless and tasteless.

The total solids should not be too great. Certain salts may produce intestinal and other disturbances. Too much organic matter may lead to diarrhoea and other intestinal disturbances, especially if the organic matter is in an active stage of fermentation. Most sanitarians have agreed that the total solids should not exceed 600 parts per million. However, one must be cautioned not to lay too much stress upon the amount of any one constituents without studying its relation with all the other constituents. As a result of experience sanitarians have come to conclusions in regard to certain maximum amounts upon which to base their opinions, reserving in each case their opinions until they have thoroughly studied the whole situation. Very hard water may be the cause of a great increase in the amount of family soap. The amount of hardness and other qualities of the water mean a great deal to the industrial world. Dr. W. G. Brown, Professor of Chemistry in the Missouri State University and Mr. A. C. Lyon, Instructor in the



Chemical laboratory have analyzed most of these same waters from the industrial standpoint. Their analyses carried on at the same time with the most of those made by me are appended to this report.

Surface water (lakes, ponds, rivers, creeks, etc.) and shallow wells should not contain much chlorine. There is a normal chlorine for each water depending upon the salt deposits before the advent of man. An increase in this amount shows an increase in human pollution, since human beings use a great deal of salt in their food, and hence excrete large quantities of it. Thus the Massachusetts Board of Health (1890 [1] 680) found that twenty persons per square mile will add on the average, 0.1 part per million of chlorine to the water flowing from such a district. There can be therefore no general rule, but it is generally agreed that the amount of chlorine of a surface or subsoil water should not exceed ten parts of chloride per million. In the case of deep wells, there can be no standard whatever; because the water depends entirely upon the stratum from which it comes. If it comes from a salt bearing stratum, of course there will be large amount of chlorine. Some waters in this state contain so much chlorine that they are not fit for general use because of the salty taste.

Free ammonia is derived by distilling the water. Albuminoid ammonia is derived by adding alkaline permanganate to the water after the free ammonia is driven off. Animal and vegetable matter contain compounds which break up into ammonia on fermentation. A large amount of free ammonia, especially when the albuminoid ammonia at the same time is relatively low indicates animal pollution, unless the water be from a deep well. In deep wells, as result of the reduction of nitrates, the free ammonia may be high and yet the water be pure. In such cases the albuminoid ammonia is low. As a rule free ammonia should not exceed 0.05 parts per million. Albuminoid ammonia should not exceed 0.15 parts per million.

Nitrates are the final oxidation products of ammonia from organic matter. A very large amount as a rule indicates previous high organic contamination but subsequent purification, especially if the free and albuminoid ammonia are low.

Nitrites indicate active fermentation and are not found in a good water in measurable quantities. Sometimes they may, however, exist in a deep well containing good water as a result of reduction of nitrates.

As a rule good water does not contain many bacteria.

Bacteria which do not grow at body heat (37 C—40 C) do not cause disease as the result of drinking water which contains them.

The best waters do not kill guinea pigs.

Waters which contain any of the group of intestinal or sewage bacteria are not fit for drinking water.

A. J. DETWEILER.  
State Bacteriologist.



	Town	Source of Supply	Name of Collector of Sample	Date of Analysis	Color	Odor	Total residue after Evaporation	Chlorine	Oxygen Consumed	Free Ammonia
1	Aurora	Spring	Prof. J. L. Green	12-15-04	Very clear	None	190	3.0	3.04	0.16
b	Aurora	Reservoir	Supt. Pub. Schools							
c	Aurora	Hydrant	Prof. J. L. Green	12-15-04	Very clear	None	190	3.45	1.52	0.04
d	Aurora	Spring River	Prof. J. L. Green	12-15-04	Very clear	None	192	3.45	1.74	0.032
2	Bethany	Creek	Prof. J. L. Green	1-23-04	Clear	None	80	3.0	0.76	0.08
			W. L. Hoffman	4-13-04	Milky cloudiness	None	623	5.5	12.85	0.14
3	Booneville	Missouri R.	Clerk							
			A. J. Detweiler	4-1-04	Slightly turbid	None	383	33.05	6.8	0.032
4	Bowling Green	Deep Well	State Bacteriologist							
5	Brookfield	Deep Wells	A. J. Detweiler	1-27-04	Clear	None	572	49.2	2.0	0.08
			Dr. Howard	3-12-04	Clear	None	416	17.0	3.2	0.12
6	Butler	Miami Creek	City Physician							
7	Brunswick	Grand River	J. D. Armond	3-21-04	—	None	275	8.5	5.2	0.25
8	Cape Girardeau	Miss. River	W. Finch City Clerk	3-24-04	Very turbid	None	527	6.0	8.05	0.32
			R. G. Whitelary Mayor	2-26-04	—	None	311	10.05	6.1	0.490
9	Carrollton		A. B. Medlin	4-7-04	Slight amber color	"	450	14.0	7.95	0.24
					brownish precipitate					
10	Carthage	Spring River	J. B. Hopper, Mayor	3-7-03	Clear	None	178	4.0	2.9	0.048
11	Chillicothe	Grand River and 24 deep wells	Dorny, Mayor	2-6-04	Slightly turbid, None		183	5.0	7.9	0.24
			O'Neill, Mgr		slight yellow tint					
12	Clinton	Bored wells	Dr. W. H. Gibbins	3-14-04	Clear	None	1588	675.3	3.1	0.28
			Health Physician							
b	Clinton	Bored wells	Dr. G. W. Menees	7-—-02	Clear	None	1942	800.0	0.75	0.715
		Hydrant in town								
c	Clinton	One of deep wells	Dr. W. H. Gibbins	7-25-03	Clear	Odor of Hydrogen Sulphide	2926	1420.0	7.00	0.746
d	Clinton	Reservoir	Dr. W. H. Gibbins	7-25-03	Clear		730			
e	Clinton	Hydrant	Dr. W. H. Gibbins	7-25-03	Clear	None	770			
13	Columbia	Moore's Lake	Dr. A. D. Detweiler	5-27-03	Clear	None	192	4.0	3.4	0.048
b	Columbia	Hinkson Creek	Dr. A. J. Detweiler	5-27-03	Turbid	None	556	7.5	13.4	0.26
c	Columbia	Hinkson Creek after aeration	Dr. A. J. Detweiler	5-27-03	Turbid	None	419	7.5	13.4	0.186
d	Columbia	Deeo Well	Dr. A. J. Detweiler	7-2-03	Clear	None	405	16.0	1.8	0.26
		State University								
e	Columbia	Deep Well Ice Plant	Dr. A. J. Detweiler	6-15-03	Clear	None	472	10.0	1.1	0.524
14	Fulton	Deep Wells	Supt. Water Works	7-7-03	Clear	None	520	11.9	1.3	0.009
b	Fulton	Deep Wells	Supt. Water Works	4-5-04	Clear	None	531	12.5	1.75	.18
15	Glasco	Missouri R. Hydrant	Dr. A. J. Detweiler	1-28-04	Extremely tur-	None	218	10.7	14.0	0.24
		in Prices Hotel			bid, heavy mud sediment					
16	Hannibal	Miss. R	Dr. Baskett, Mayor	2-11-04	—	None	241	4.5	11.1	0.40
17	Higginsville	Deep & Dug Wells	Dr. A. J. Detweiler	1-28-04	Very clear	None	362	23.0	2.0	0.03
		Hydrant Arcade Hotel								
18	Holden		Supt. Water Works	4-1-04	Very turbid	None	491	3.5	13.9	0.064
19	Jefferson City	Missouri R. Hydrant	Dr. A. J. Detweiler	4-2-04	Very turbid	None	370	14.5	8.0	0.008
20	Joplin	Shoal creek	W. P. Roberts	2-26-04	Clear	None	151	4.0	1.0	0.48
			Supt. Pub. Schools							
b	Joplin	Shoal Creek		10-11-02	Clear	None	159	3.0	1.35	0.02
21	Kansas City	Missouri R.	E. M. Perdue	3-25-04	Clear	None	336	16.5	4.85	0.024
b	Kansas City	Spring No. 1	P. Setzler & Sons	10-19-03	Clear	None	732	44.0	2.2	0.069
c	Kansas City	Union Springs	E. H. Wherry, others	10-31-03	Clear	None	757	37.8	1.4	0.024
22	Kirksville	Chariton R.	Dr. A. J. Detweiler	4-4-04	Clear	None	188	4.0	7.6	0.12
23	Lamar			3-18-04	Slight amber tint		159	8.0	7.5	0.024
24	Lexington	Missouri R.	J. Fegert, City Clerk	4-13-04	Slight turbidity	None	391	23.0	7.95	0.157
25	Louisiana	Miss. R.	Dr. A. J. Detweiler	1-27-04	Very turbid	Slight	243	5.6	11.8	0.296
		Hydrant Planters Hotel			mud odor					
b	Louisiana	Miss. R.	R. R. Rowley	3-3-04	Clear	None	168	8.3	5.5	0.32
		High School Hydrant								
26	Macon		Dr. A. B. Miller	2-8-04	Quite turbid		251	3.0	12.0	0.32
27	Marshall	Three Deep Wells	Dr. A. J. Detweiler	1-27-04	Very clear	None	1202	464.0	1.95	0.432
		Hydrant Hotel Wing								
28	Maryv lle	River Water	E. Bainum, City Clerk	3-18-04	Clear	None	164	4.0	6.8	0.56
b	Maryville	Water Jug No. 1	C. P. Denny	7-31-02	Clear but sediment	"	193	1.0	13.0	1.15
c	Maryville	Water Jug No. 2	C. P. Denny	7-31-02	Amorphous brownish sediment	—	191	3.0	9.1	0.31



Albuminoid Ammonia	Nitrites Calculated as N (Nitrogen)	Nitrites Calculated as N (Nitrogen)	Number of Bacteria in one cubic centimetre (1/4 teaspoon) of water Agar plates counted 3 d. a.	Growth of Bacteria in Beef Tea at 40 C-42 C	Effects on Guinea pig or intraperitoneal injection of beef tea culture incubated at 40 C for 24 hours	Name of Toxicogenic or pathogenic bacteria are found in hearts blood of dead Guinea pig	Remarks
0.15	0.23	0.0	67600	Cloudy	No bad effect		Germs are high result of delay by Express Co Sample delayed Sample delayed
0.10	1.61	0.004	189605	Cloudy	No bad effect		
0.03	1.50	Trace	63245	Growth	No bad effect		
0.15	1.25	0.006	3740	Growth	No bad effect		
0.55	2.5	0.052	23582	Heavy growth	Killed G. Pig in 6 hours	Bacillus Coli	
0.16	0.40	0.008	3500	Putrid odor	No bad effect		
0.15	12.0	Trace	220	No visible growth	No bad effect		
0.22	0.50	0.018	1060		No bad effect		
0.16	0.60	0.0	1040	Heavy growth on surface	"		
0.60	0.60	0.026	19500		No bad effect		
0.50	0.90	0.1333	9300	Heavy clouds	No bad effect		
				slight pellicle bad odor			
0.18	0.35	0.05	14706	Growth	No bad effect		
0.17	0.625	0.007	660	Surface scum	No bad effect		
0.33	0.26	0.055	5859	Heavy growth	No bad effect		
0.05	0.8	0.02	195	Hardly any growth	No bad effect		
0.075	Trace	Trace	8680	Heavy growth	Killed G. pig in 12 hours	Bacillus Coli.	Reservoir ordered cleaned
0.075		0.0	30		No bad effect		
			510		No bad effect		
			1160		Guinea pig died	Proteous Vulgaris	
0.246	0.25	0.0	210	Growth	No bad effect		
0.952	0.75	0.109	17300	Growth	Killed Guinea pig	Unclassified	
0.82	0.8	0.035	9176	Growth	No bad effect		
0.02	0.06	0.0	80	Growth	No bad effect		
0.048	0.29	0.0	9	No visible growth	No bad effect		
0.03	0.25	0.0	2622	Growth	No bad effect		
0.06	0.11	Trace	1960	Growth	No bad effect		
0.55	0.31	0.0	118815	Cloudy growth	Killed G. pig bet. 50 to 60 hrs	Unclassified	
0.50	0.56	Trace	23750	Light scum on surface	No bad effect		
0.02	Trace	0.004	70	No visible growth	No bad effect		
1.00	0.6	0.02	66300	Heavy cloud	Killed G. pig	Bacillus of the colon group and motile micrococcus	
0.50	0.56	0.008	81250		No bad effect		
0.12	1.00	0.0	2980	Cloudy slight scum	No bad effect		
0.12	2.50	0.0	2772		No bad effect		
0.15	0.30	0.006	1500	Heavy cloud	No bad effect		
				No bad odor			
0.23	11.0	0.9	3730	Cloudy	No bad effect		
0.09	6.26	Trace	803	Cloudy	Killed G. pig within 24 hrs	Germ belongs to Friedlander Bacillus ground	
0.50	0.31	0.0	2290	Growth	No bad effect		
0.40	Trace	0.0	49660	Scum on surface	No bad effect		
0.30	0.31	0.016	26130	Heavy cloud	Putrid odor		
1.70	0.55	0.9	16250	Heavy cloud	Killed G. pig in 18h	Bacterium acidiformans	Filter not working effectively Filter working well, hence few bacteria
0.25	0.50	0.004	121		No bad effect		
0.92	0.43	0.04	23125	Heavy growth	No bad effect		
				Putrid odor			
0.13	Trace	Trace	80	No apparent growth	No bad effect		
0.28	0.075	0.0	520	Scum on surface	No bad effect		
1.28	0.05	0.0	4267	Cloudy	No bad effect		
0.28	0.10	Trace	32273	Cloudy	Killed pigs in 2 days	Belongs to typhoid group but is not typhoid bacillus	



Town	Source of Supply	Name of Collector of Sample	Date of Analysis	Color	Odor	Total residue after Evaporation	Chlorine	Oxygen Consumed	Free Ammonia
d	Maryville, One Hundred R.	Mayor Garrett	8-16-02		None	216	3.0	8.22	0.93
e	Maryville, One Hundred R.	Water Company	8-21-02	Slightly cloudy	Vegetable odor	200	12.0	5.85	0.42
29	Mexico, Surface Reservoir	Dr. A. J. Detweiler	1-26-04	Amber tint	Mushroom odor	174	2.7	6.2	0.32
30	Monett Dug Well	J. E. Clinton	3-2-04	Clear	None	237	8.5	1.1	0.096
31	Moberly Reservoir	Supt Water Works Dr. A. J. Detweiler	4-4-04	Slight turbidity	Slight odor	215	3.5	10.1	0.20
32	Nevada Bored wells	George Stump City Clerk	4-4-04	Very clear	None	1310	576.0	3.2	0.36
33	Palmyra Spring	J. Thomas, City Clerk	3-14-04	Clear	None	420	31.5	2.9	0.056
34	Paris River	J. F. Mors	3-16-04	Cloudy	None	259	5.0	9.0	0.32
35	Popular Bluffs Black R.	Dr. Norwine	7-6-03	Clear	None	125	1.0	3.5	0.024
36	Rich Hill R. Marias des Cygne	J. Jones, City Clerk	3-26-04	Very turbid	None	337	13.5	8.2	0.12
37	St. Charles Missouri R.	Charles Kanstine City Clerk	3-16-04	Slight Cloudiness	None	423	25.1	4.8	0.20
38	St. Louis, Mississippi R.	Dr. W. G. Brown Prof. of Chem M.S.U.	3-10-04	Milky cloudiness	None	381	22.5	5.9	0.32
39	Sedalia Deep Well test before completion	Dr. F. N. Fulkerson	7-30-02	Clear	None	318	4.0	0.15	0.03
b	Sedalia Deep Wells and reservoir, mixed	D. F. N. Fulkerson	2-8-04	Slightly turbid	None	134	4.0	3.5	0.12
40	Slater Deep Well Hotel Hydrant	Dr. A. J. Detweiler	1-29-04	Very clear	None	726	166.0	3.1	0.48
41	Springfield, Spring	Mayor, City Clerk	3-2-04	Very clear	None	229	4.5	1.8	0.04
42	Trenton, Grand River	S. M. Hill, City Clerk	2-27-04		None	202	4.0	10.3	0.80
43	Warrensburg Artificial Lakes State Normal Hydrant	Dr. J. A. B. Adcock Mem. State Dd. Health	2-6-04	Clear	None	168	6.1	3.4	0.08
44	Washington, Missouri R.	Mayor Edward Busch	2-10-04	Fairly clear	None	357	17.0	8.9	0.20
45	Webb City, Spring and Creek	Mayor Wersz	2-26-04	Clear	None	412	5.0	1.15	0.096
For Comparison	New York City Surface Water	Records				75	2.8		0.009
	Brooklyn Sub-soil Water	Records				64	13.5		0.001
	Boston Surface Water	Records				47.6	5.1		0.008
	Cincinnati Surface Water	Records				110	14.0		0.003
	Chicago Surface Water	Records					2.3		0.005
	Philadelphia Surface Water	Records				120	4.0		0.01
	Washington D. C. Surface Water	Records				126	2.8		0.00

Locality	Total Solids		Loss on Ignition		Silica (Si O)		Alumina (Al O)	
	Grains per U.S. gallon	Parts per Million	Grains per U.S. gallon	Parts per Million	Insol. in Hcl Grains per U. S. Gal.	Parts per Million	Grains per U. S. Gal.	Parts per Million
Aurora	9.8946	169.4	0.4789	8.2	0.4789	8.2	0.0088	0.15
Booneville	22.3943	383.4	1.4368	24.6	4.5093	77.2	0.3715	6.36
Bowling Green	33.3251	572.2	9.5266	163.1	0.2336	4.0	0.0403	0.69
Brookfield	24.3277	416.5	1.1156	19.1	1.0046	17.2	0.0169	0.29
Brunswick	30.8054	527.4	1.8107	31.0	15.7765	270.1	0.8469	14.5
Butler	16.0744	275.2	1.2032	20.6	0.4789	8.2	0.0187	0.32
Cape Girardeau	18.2064	311.7	1.6997	29.1	4.8714	83.4	0.2833	4.85
Carthage	10.3736	177.6	0.6834	11.7	0.9404	16.1	0.0117	0.20
Chillicothe	10.7007	183.2	0.9606	16.6	1.1916	20.4	0.0157	0.27
Clinton	92.7403	1587.8	7.9496	136.1	0.4906	8.4	0.0123	0.21
Columbia (a) City Supply	16.4132	281.0	1.4777	25.3	0.8002	13.7	0.0624	1.24
Columbia (b) Deep Well M.S.U	22.9668	393.2	1.1682	20.0	0.6251	10.7	0.0058	0.10



Albuminoid Ammonia	Nitrates Calculated as N (Nitrogen)	Nitrates Calculated as N (Nitrogen)	Number of Bacteria in one cubic centimetre (.4 teaspoon) of water Agar Pils counted 3d da.	Growth of Bacteria in beef tea at 40°-42° C	Effects on Guinea pig of intraperitoneal injection of beef tea culture incubated at 40° C for 24 hours	Name of Toxicogenic or pathogenic bacteria first found in hearts blood of dead Guinea pig	Remarks
1.045	0.05	0.125	29260	Cloudy	Killed guinea pig in 12 hours	A motile and a non-motile bacillus not previously classified	
0.58	0.75	0.013	18900	Cloudy S. on surface	Killed G. pig 12 hrs	Motile and non-motile bacilli unclassified	
1.0	0.23	0.0	250	Scum on surface	Guinea pig died on 8th day	Bacillus coli.	
0.10	3.0	0.0	450	Putrid odor	No bad effect		
0.50	0.31	0.016	31200	Heavy scum on surface	No bad effect		
0.05	0.40	Trace	6618	Heavy scum slight odor	No bad effect		
0.07	16.65	0.0	4130	Very faint growth	No bad effect	Bacterium aerogenes	
0.40	0.60	0.002	1500	Scum on surface	Died in 48 hrs		
0.006	0.21	Trace	2890	Slight cloud	No bad effect		
0.40	0.446	0.018	11050	Cloudy	Killed G. pig 12 hrs	Related to typhoid g'p	
0.17	0.46	0.040	1995	Heavy growth, bad odor	Pig died in sev'l da.		
0.30	1.04	0.08	14694	Scum on surface	No bad effect		
0.075	0.125	Trace	7361		Killed G. pig	Bacillus coli.	Jug not properly prepared, hence bacillus coli means nothing
0.25	0.12	0.0	320	Scum on surface	No bad effect		
0.09	0.46	0.009	146	No apparent growth	No bad effect		
0.12	3.0	Trace	14012	Heavy scum on surface	No bad effect		
0.60	0.32	0.0714	19530	Cloudy, scum on surface	"		
0.30	0.237	0.0	360	Slight growth	No bad effect		
0.40	0.875	0.0	3800	Heavy cloud, scum surface	"		
0.22	1.56	0.0	120	Slight cloudiness, no odor	"		
3.6	0.28	0.0					
0.7	16.00	0.0					
0.16	0.07	0.001					
0.09	0.26	0.01					
0.075	Trace						
0.10	1.0	0.0					
0.12	1.0	0.001					

Ferrous Oxide (FeO)		Lime (CoO)		Magnesia (MgO)		Sulphur Trioxide (SO)		Chlorine	
Grains per U. S. Gal.	Parts per Million	Grains per U. S. Gal.	Parts per Million	Grains per U. S. Gal.	Parts per Million	Grains per U. S. Gal.	Parts per Million	Grains per U. S. Gal.	Parts per Million
0.0643	1.1	4.4508	76.2	0.2371	4.06	1.2499	21.39	2.0151	3.45
0.4381	7.5	4.6844	80.2	1.4924	25.55	3.8551	66.25	1.9507	33.50
0.1226	2.1	9.2988	159.2	3.4403	58.89	2.3189	39.71	2.8737	49.20
0.1460	2.5	5.2861	90.5	1.1367	23.40	2.8504	48.83	0.9929	17.00
1.4250	24.4	3.3995	58.2	0.9311	15.94	1.9861	34.22	0.3504	6.00
0.2044	3.5	6.1330	105.0	1.1261	19.28	3.9135	66.65	0.5549	9.50
0.5315	9.1	3.2476	55.6	0.7547	12.92	2.6343	45.13	0.5899	10.10
0.1811	3.1	4.0887	70.0	0.4106	7.03	1.2207	20.85	0.2453	4.20
0.4614	7.9	0.2962	5.1	0.6542	11.23	1.2441	21.26	0.2921	5.00
0.1811	3.1	9.1003	155.8	4.8713	83.40	5.4906	94.03	39.0471	668.50
0.3096	5.3	4.8480	83.0	0.8276	14.17	5.3737	91.97	0.3563	6.10
0.1285	2.2	4.8597	83.2	2.7581	47.22	6.8106	116.60	1.1332	19.40



Locality	Total Solids		Loss on Ignition		Silica (Si O)		Alumina (Al O)	
	Grains per U. S. Gal.	Parts per Million	Grains per U. S. Gal.	Parts per Million	Insol. in Hcl Grains per U. S. Gal.	Parts per Million	Grains per U. S. Gal.	Parts per Million
Glasgow	12.71	218.0	3.6389	62.3	2.2604	38.7	0.7346	12.68
Hannibal	14.0534	240.6	1.8632	31.9	3.2476	55.6	0.0863	1.48
Higginsville	21.1473	362.1	1.3901	23.8	1.0514	18.0	0.0169	0.29
Holden	26.9211	460.9	2.1612	37.0	14.7660	252.8	1.7453	29.88
Jefferson City	21.6233	370.2	1.6822	28.8	5.8760	100.6	0.7640	13.08
Joplin	8.7907	150.5	3.9135	67.0	0.3446	5.9	0.0105	0.18
Kansas City	19.0491	336.4	1.1798	20.2	1.0455	17.9	0.0473	0.81
Kirksville	10.1751	174.2	1.0105	17.3	0.6191	10.6	0.0070	0.12
Lamar	9.2872	159.0	0.8878	15.2	3.6214	62.0	0.0023	0.04
Louisiana (a) Hydrant	14.1936	243.0	2.8737	49.2	3.3176	56.8	0.4935	8.45
Louisiana (b) Reservoir	10.1283	173.4	1.3317	22.8	0.9462	16.2	0.1192	2.04
Macon	14.6404	250.6	2.2020	37.7	7.6049	130.2	0.4217	7.22
Marshall	70.2088	1202.0	4.8363	82.8	0.6600	11.3	0.0958	1.64
Maryville	9.5026	164.4	0.5899	10.1	0.3271	5.6	0.0105	0.18
Mexico	10.1633	174.0	2.2078	37.8	3.0461	52.1	0.4468	7.65
Monett	15.8548	237.2	1.4427	24.7	0.6133	10.5	0.0058	0.10
Nevada	72.9132	1248.3	1.2850	22.0	0.5841	10.0	0.0105	0.18
Palmyra	24.7015	422.9	2.0385	34.9	1.1682	20.1	0.0117	0.20
Paris	15.1452	259.6	2.1903	37.5	2.1728	37.2	0.4182	7.16
Rich Hill	22.6221	387.3	2.9555	50.6	4.6553	79.7	0.3633	6.22
Sedalia	7.8345	134.3	1.2149	20.8	0.7126	12.2	0.3925	6.72
Slater	42.4290	726.4	7.4764	128.0	0.3037	5.2	0.0058	0.10
Springfield	13.3583	228.7	0.8586	14.7	0.8937	15.3	0.0123	0.21
St. Charles	24.7249	423.3	1.5887	27.2	3.2125	55.0	0.3931	6.73
St. Louis	22.2776	381.4	1.8691	32.0	4.3340	74.2	0.4334	7.42
Trenton	11.7754	201.6	1.5478	26.5	3.2126	5.5	0.1565	2.68
Washington	20.9523	357.0	2.1152	36.4	3.4578	59.2	0.3347	5.73
Warrensburg	9.8421	168.5	0.9462	16.2	0.5141	8.8	0.0637	1.09
Webb City	23.9402	412.4	1.8048	30.9	4.4391	76.0	0.0403	0.69



Ferrous Oxide (FeO)		Lime (CaO)		Magnesia (MgO)		Sulphur Trioxide (SO)		Chlorine	
Grains per U. S. Gal.	Parts per Million	Grains per U. S. Gal.	Parts per Million	Grains per U. S. Gal.	Parts per Million	Grains per U. S. Gal.	Parts per Million	Grains per U. S. Gal.	Parts per Million
0.6425	1.0	1.9865	34.1	0.7301	12.46	1.4836	25.37	0.6249	10.70
0.5958	10.2	2.6051	44.6	0.9591	16.42	1.8399	31.55	0.2453	4.20
0.1588	2.6	4.1705	71.4	0.7832	13.41	1.2850	22.02	1.3142	22.50
1.7465	29.9	1.4953	25.6	0.7943	13.64	1.7581	30.11	0.2044	3.50
0.6717	11.5	3.7966	65.0	1.1448	19.64	3.1541	53.91	0.8469	14.50
0.1285	2.2	3.8434	65.8	0.3093	5.29	0.9589	16.37	0.2219	3.80
0.1810	3.1	6.4601	110.6	1.5361	26.31	4.5559	78.49	0.9636	16.50
0.1986	3.4	2.7688	47.4	0.7826	13.41	1.6939	29.33	0.2513	4.25
0.2278	3.9	2.5807	44.2	0.4743	8.12	2.0444	35.12	0.4073	8.00
0.6229	10.7	1.8867	32.3	1.1039	18.93	1.9947	34.16	0.3271	5.60
0.2677	4.6	2.4182	41.4	1.0671	18.26	2.6559	45.26	0.5374	9.20
0.7184	12.3	1.0173	17.4	0.4439	7.61	1.1562	19.81	0.2044	3.50
0.2453	4.2	12.7451	218.7	2.2862	39.14	9.2988	159.17	27.1022	464.00
0.1226	2.1	2.9731	50.9	0.9187	15.73	0.9558	16.42	0.2395	4.10
0.8119	13.9	0.8112	15.6	0.9958	17.22	0.4966	8.50	0.1577	2.70
0.0993	1.7	5.2511	89.9	0.7218	12.36	2.4415	41.76	0.4789	8.20
0.1285	2.2	7.0150	120.1	3.7359	63.96	4.1938	71.85	33.6441	576.00
0.2804	4.8	8.7439	149.7	0.9737	16.67	3.8901	66.60	1.8399	13.50
0.4731	8.1	3.6273	62.1	0.8826	15.11	3.6389	62.28	0.3213	5.50
0.5374	9.2	5.8352	99.9	1.1156	19.10	2.3949	41.12	0.7885	31.50
0.2044	3.5	1.6472	28.2	1.1431	19.57	3.7732	64.68	0.2394	4.10
0.1285	2.2	6.7464	115.5	2.7686	47.41	3.2418	55.54	9.6961	166.00
0.1752	3.0	5.5472	94.8	0.4719	8.08	0.8411	14.36	0.2628	4.50
0.3855	6.6	5.5255	94.6	1.8440	31.56	4.1296	70.71	1.4661	25.10
0.5432	9.3	3.9252	67.2	1.4607	25.01	4.2581	72.97	1.3114	22.50
0.6483	11.1	1.8223	31.2	0.5122	8.77	1.6238	27.77	0.1986	3.10
0.5665	9.7	3.7148	63.6	1.0946	18.74	0.7611	13.03	0.9520	16.30
0.1811	3.1	2.9614	50.7	0.8259	14.14	1.6997	29.06	0.3563	6.10
0.1518	2.6	7.7627	132.9	0.7073	12.11	9.8421	168.52	0.2804	4.80







# BULLETIN

## OF THE

# MISSOURI STATE BOARD OF HEALTH

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**VOL. I.**

**MAY, 1904.**

**NO. 5**

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### **"THE PRESENT CONDITION OF SMALLPOX IN THIS STATE."**

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We desire through the medium of the "Bulletin" to communicate to all parts of the State, in accordance with the law pertaining to contagious and infectious diseases, the present condition of smallpox in the State of Missouri. We now have a few localities in this State infected with smallpox,—a few cases being in Scotland County, a few cases in Vernon County, a few in Oregon County, and a number of cases in Adair County,—a part of which is under State quarantine,—an area of five miles surrounding Novinger and Connelssville, Mo.

We have had a great deal of trouble with smallpox generally throughout the State in coal and mining camps, but we have been put to the test in the Western part of Adair County, which is largely composed of coal and mining camps. Smallpox has prevailed there in greater or less numbers for the past year. Of course the law requires County Boards of Health to be organized, which are composed of the County Court and a physician of their own selection. There are a few counties in the State that have seen fit to absolutely ignore the statutory law; while in Adair County, the County Court did organize a County Board of Health in compliance with the law, but that was all they did,—was to organize. The State Board of Health appealed to them personally, by telegram and by mail, urging them to co-operate with the Municipal Boards of Health of Novinger and Connelssville, in order to stamp out the present existing smallpox in their district.

The President and Secretary of the State Board made a personal investigation of this condition, something like six weeks ago, and obtained from the County Board of Health a promise that they would work in harmony with the Municipal Boards of Health of the two infected districts, but we were informed that they had done nothing and had not taken a step towards the suppression of the disease. Upon investigation we found that there had been three deaths in Connelssville, Mo., from this dread disease and yet this County Board of Health and the Municipalities failed to act. We then appealed to the Attorney General of the State to compel these Local Boards of Health to comply with the law and



not being able to get this machinery in operation,—finally at a meeting of the State Board of Health in St. Louis, Mo., on the 2nd day of May, we passed a ruling establishing a State quarantine including Novinger and Connelleville with an area of five miles around, which took in all the mining district. We notified the Postmaster General to stop all mail into this infected district,—either going in or coming out, unless said mail was properly disinfected. We notified the Manager of the Quincy, Omaha and Kansas City Railroad Company and the C., B. & Q. Railroad Company, to instruct the operators of their company to stop the travel of the public to and from this quarantined district. These notices were promptly responded to, and inside of twenty-four hours we had a quarantine pretty thoroughly established. We then received notice from the County Court that they would at once proceed to erect a pest house in this district, which they did and therefore signified their willingness to co-operate with the State Board of Health and the Local Boards of Health to assist in the management of this quarantine.

Your humble servant was called there on the 10th of May where he spent two days in correcting the irregularities of the quarantine and succeeded in correcting many evils that were existing, viz.: The stopping of schools, churches and public gatherings of all kinds, and also established a guard to enforce these rules. I am glad to say that we found in the Managers of the various Coal Companies, gentlemen who were willing and anxious to assist the State Board of Health to stamp out this disease and they seemed ready to spend their time and money in order to gain the desired result; all of which was very gratifying to us. We also secured the co-operation of the two above mentioned towns and appointed a deputy sheriff as a guard in the county district to see that the rules were enforced. We also recommended that the two incorporated towns pass an ordinance of compulsory vaccination which ordinance was passed, and it is now in force.

In our investigation we found that the people themselves were the fumigators. They would take a little sulphur and put it in a vessel and burn it and allow the children and the domestic animals to remain in the building during this fumigation. Of course the State Board of Health has issued periodicals condemning this method of fumigation, and giving correct methods of fumigation by formaldehyde gas. We advised the County and all the Coal Companies to procure these formaldehyde gas generators, which they did, and they are now able to fumigate their houses and buildings in a proper and effective manner. We also issued orders to operators of coal mines that hereafter they would be compelled to refer all employees to their physician as to their health, and to ascertain whether or not they were properly vaccinated, before they would be allowed to proceed in the service of the company. The Coal Companies were also instructed to see that all their houses that had been occupied by a tenant with an infectious disease be thoroughly fumigated before another party was allowed to occupy it.

The three important factors in the suppression of smallpox are, viz.: *Isolation, Vaccination and Fumigation*; and if these three cardinal principals are carefully observed, there is absolutely no necessity of smallpox prevailing in a community but a short time, and the condition in Adair County today is wholly due to the lack of effort on the part of the Adair



County Board of Health, and the Boards of Health of Novinger and Connelssville, to do their duty. If they had done their duty as prescribed by the statutory law, all this trouble and expense would have been avoided, and I will say in conclusion, that the State Board of Health wishes to announce to the State of Missouri, that whenever a County Court, which constitutes a County Board of Health, refuses to act and do their duty in compliance with the statutory law of this State, the State Board of Health will then take action to compel them to do so, for the Attorney General told me personally that whenever a County Board of Health refused to do their duty, for me to notify him at once, and he would take the matter in hand.

We hope that the condition of affairs in Adair County will be a lesson to the other counties in the State, for whenever a County Board of Health neglects its duty, then it becomes the duty of the State Board of Health to see that the statutory law is carried out.

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#### **QUARANTINE RULES AND REGULATIONS OF THE STATE BOARD OF HEALTH OF MISSOURI FOR THE PRE- VENTION AND ISOLATION OF SMALL-POX.**

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**1st.** Whenever the rules designate that a quarantine shall be established to prevent the spread of any disease, it is meant that the person or persons affected with such disease and their attendants and all persons who have come in contact with such person, shall not be allowed to leave the premises designated as under quarantine, neither shall any person, except the attending physician, be allowed to enter and leave such premises except upon the written order of the health officer until the quarantine shall have been raised. Guard must be maintained if necessary to enforce this rule.

**2nd.** The city or district in which smallpox exists should be provided with a suitable building in which to quarantine all persons infected with the disease. This building should be designated as the Smallpox Hospital, and located a safe distance from the residence portion of said district, and away from all springs, wells and streams of water. In case a suitable building cannot be provided, a large tent may be substituted. But where neither building nor tent may be desirable, infected persons may be isolated in their residences, under careful supervision of guard if deemed necessary by the local health officials.

**3rd.** No person without a permit must be allowed to approach the Smallpox Hospital or tent nearer than one hundred yards, and no person must be allowed to go or come from the infected building or tent, except the medical attendant, after being properly disinfected.

**4th.** When any building, house, portion of a house or other place is quarantined because of a contagious disease, the health officer shall cause to be fastened in the most conspicuous position upon such house



or building, a placard or flag, upon which is printed the name of the disease, in letters at least two and one half inches in height.

**5th.** All persons who have been exposed to the disease must be immediately vaccinated. If such person becomes infected, he should at once be removed to the Smallpox Hospital or otherwise isolated; but if he does not develop the disease, he should have clothing boiled or baked in an oven and take a hot antiseptic bath before being permitted to mingle with the outer world.

**6th.** All dogs, cats and other pet animals exposed to the disease should be killed and burned.

**7th.** All exposed and unprotected persons should be immediately vaccinated, regardless of previous vaccination.

**8th.** All discharges coming from persons infected with smallpox must be burned or boiled, and all water used in bathing the patient must be boiled or disinfected with formaldehyde, corrosive sublimate or chloride of lime solution before being thrown out.

**9th.** For the protection of public health, all persons infected with smallpox should be quarantined for a period not less than for forty days, and until the patient, sick-room and all its contents have been properly disinfected.

**10th.** When persons confined in a quarantined house have recovered from the disease for which the quarantine is established, or when the quarantine is for exposure to a contagious disease, and the period of incubation has elapsed) they shall be discharged from quarantine on the order of the health officer, provided that before being discharged from such quarantine, they have taken a thorough antiseptic bath and put on clothing that has been fumigated with formaldehyde gas.

**11th.** When all persons contained in a quarantined house or building are free from danger of spreading the disease, the quarantine should be raised by order of the health officer, but not until every exposed room, together with all furniture, bedding, clothing and other articles contained therein have been disinfected with formaldehyde gas. Such disinfection must be done by or under the direction of the health officer or his deputy.

**12th.** Physicians visiting patients in quarantine must take all possible precautions to avoid spreading the disease.

**13th.** Whenever disinfection is mentioned in the rules of the State Board of Health, it is meant, unless otherwise specified, that the disinfection shall be done with formaldehyde gas, using at least twelve ounces of a 40 per cent. solution, in a generator, for each 1000 cubic feet of room space, or the equivalent, if another solution is used or if a generator using solid formaline or paraformaldehyde is used, all windows, doors, or other openings having been closed and the cracks



sealed with strips or paper pasted over them and left so for at least six hours.

**14th.** When there is good reason to suspect the existence of smallpox in any house or place, from a report other than that of a physician, it shall be the duty of the local Board of Health to make an investigation at once.

**15th.** In the case of smallpox it shall be the duty of the Board of Health receiving such a report, either to at once quarantine the house in which the patient resides or is found, or to remove the patient to an infectious disease hospital, disinfect the house and contents and quarantine the inmates who are not protected against smallpox by a recent successful vaccination, or by a previous attack of the disease, for fourteen days from the completion of such disinfection.

**16th.** All persons unprotected against smallpox by a former attack of the disease, or by recent successful vaccination, and known to have been exposed to the contagion of the disease, shall be quarantined for fourteen days from the time of the last exposure or be vaccinated and disinfected.

**17th.** Quarantine of smallpox patients shall be maintained until they have completely desquamated and until the house and its contents have been properly disinfected under the supervision of the Board of Health. Persons in the house with the patient, who are not protected against smallpox by a recent successful vaccination or by a former attack of the disease, shall be quarantined for fourteen days from the time disinfection of the house is completed.

**18th.** Persons who have recently recovered from smallpox or suspected smallpox, the nature of their malady not having been known or recognized at the time of their illness, shall not be returned to their homes until their dwellings and contents, including the clothing of the inmates, have been properly disinfected under the supervision of the Board of Health.

**19th** Bodies of persons who have died of smallpox must be prepared for burial by being wrapped in a sheet soaked in a solution of formaline or corrosive sublimate or embalmed and wrapped as above, and no persons except those in charge of the body must be allowed to attend the funeral. Such burial should be conducted during the night.

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#### **"TO THE REVISION COMMITTEES."**

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The State Board of Health, feeling the importance of Revision of a New Roster of the licensed physicians practicing medicine in this State, deemed it advisable that a New Roster be compiled, in view of the fact that the past records kept by the Secretaries of the State Board of Health, contains about 12,000 names of physicians registered in this State, many



of whom are dead, many moved away, and many have ceased to practice medicine; and in order that we might arrive at an approximate number of licensed physicians now practicing medicine in Missouri, we have appointed in each county in the State, a Revisory Committee, composed of three reputable physicians, the Chairman of which, when possible, was the County Board Physician. Each committee made out a report of the licensed physicians practicing medicine in their respective county and forwarded same to the Secretary of the State Board. There were a few counties from whom we failed to receive reports, and in these instances, we were compelled to appeal to the County Clerk for the desired information. These county committees are intended to be permanent, that matters arising in their respective counties, in reference to practitioners doing business in their communities without a license and any other violation of the Practice Act,—they are expected to take the matter up, investigate it, secure evidence and present the facts to the Prosecuting Attorney, whose duty it is to see that the statutory law is enforced.

It has been demonstrated that it is impossible for the State Board of Health to accomplish results in this direction without the aid of the physicians or a Committee of Physicians in the respective counties in the State. The territory is entirely too large, but it is the duty of every active physician to know the record of all the physicians practicing medicine in his county, and a Committee of three can obtain the information as to whether or not he is a legal practitioner. Another thing that the State Board of Health has demonstrated, is that it is impossible for us to bring to bear sufficient influence upon the Prosecuting Attorneys of the different counties in the State to prosecute the violators of the Practice Act, but if there is a good, influential Committee in every county in the State, who are willing to exert themselves in the interest of the profession, they can generally persuade the Prosecuting Attorney to take the matter in hand.

This Revision or New Roster will be ready for distribution in about ten days, and we propose to furnish a copy to every Prosecuting Attorney in the State, and also to the Revisory Committees, and they will then have in their possession, the information necessary to facilitate their elimination of all illegal practitioners in their respective communities.

The time has come when the united efforts of the profession along this line will assist materially in driving out of the State, all the so-called physicians who are incompetent to practice medicine, and who are practicing without a license, and place the licensed practitioners of medicine on a basis that they will feel that the license which hangs in their office is a safe-guard and protection to them.

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### THE MODERN TREATMENT OF TYPHOID FEVER.

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BY W. GILMAN THOMPSON, M. D., NEW YORK CITY.

The so-called "antiseptic treatment" of typhoid fever has been advocated by many clinicians on the theory that, the focus of activity of the bacilli being in the intestines, they might be there reached and destroyed or rendered innocuous by bactericides. There are several objections to this view: First, there is difficulty in administering a true antiseptic in sufficient strength to kill typhoid bacilli, which will not injure the even



more sensitive epithelium of the alimentary mucosa. Secondly, there is grave doubt whether many of the alleged intestinal antiseptics may not become so altered in strength or composition by the time they reach the ileum as to have their efficiency greatly impaired by the varying chemical reactions with which they meet, and by dilution with the gastric, intestinal and biliary secretions. Thirdly, the typhoid bacilli are entrenched in large numbers within the lymph structures of the intestinal mucosa, where antiseptics cannot reach them except through a process of absorption, a process which gives further opportunities for diminution in strength and modification in composition. Finally, the typhoid bacilli have been recently shown to be much more widely distributed throughout the system than was originally supposed—witness the frequency with which, in ordinary cases, they are discovered in the blood, urine, kidneys, gall bladder and other viscera.

Upon these theoretical grounds I have always been skeptical as to the efficacy of intestinal antiseptics in typhoid fever, although I confess having given their use a fair trial with disappointing results, an experience which I believe is shared at present by a number of others. There is analogy between the failure of intestinal antiseptic, that is, true bactericides and the failure of similar remedies to cure tuberculosis by inhalation, and the discovery of the extensive distribution of typhoid bacilli within the body has proved a serious check to the antiseptic method.

A report of E. K. Kerr and F. G. Harris, made before the Chicago Medical Society, October 1, 1902, refers to the finding of typhoid bacilli in the blood in 87.5 per cent. of 102 collected and original cases of typhoid fever, examined within the first week of the disease. H. Schottmuller, writing September 23, 1902, (in the *Munchener Med. Woch.*), states that the bacilli are found in the blood in 80 per cent. of cases of typhoid fever examined, and claims, in common with other observers, that their number bears a direct relation to the severity of the stage of the disease, and that, having disappeared toward its defervescence, they are again discoverable in the blood in relapse. He therefore argues that the lymphatic lesions of typhoid fever are rather of the nature of metastases than primary lesions.

The accumulating data of this sort are rapidly leaving the intestinal antiseptic treatment of typhoid fever without either rational or empirical basis.

An initial dose of calomel is usually desirable when the typhoid fever patient is seen within the first week, but the daily exhibition of calomel throughout the disease, which was extolled by Watson (*Practice of Physic*, Vol. II) more than fifty years ago, and which is often advocated in the medical press of today, as if it were new, accomplishes the salivation much oftener than the salvation of the patient. It is a decided misconception to regard calomel as an intestinal antiseptic in this disease. There is grave doubt whether any of it is converted into corrosive sublimate in the intestine, and even if it were all so converted, a half grain dose of the drug mixed with a quantity of gastric and intestinal fluids and fluid food, equaling at least a quart, would mean a dilution of nearly 1 :30,000, whereas a strength of 1 :2,500 is required to inhibit the growth of typhoid bacilli, and, according to Sternberg, a 1 per cent. solution is required if albumen be present (as would usually be the case in the intes-



tine), owing to the formation of insoluble albuminates of mercury in a non-acid medium.

The explanation of the failure thus far to discover an antitoxic serum of potency in this disease is probably to be similarly explained on the ground that the condition present is a bacteriemia, and the problem of antagonizing it is very different from that afforded by either diphtheria, cholera or dysentery. It is, however, to be hoped that ere long some bactericide may be discovered of sufficient strength to destroy the typhoid bacilli themselves in their extensive distribution throughout the body, without injury to the blood and other tissues.

Very different from the problem of intestinal antiseptics is that of intestinal antifermentatives. Persistent tympanites, with a rigid, distended and often somewhat tender abdomen, is a condition more to be dreaded than any symptom, not even excepting intestinal hemorrhage. Extreme gaseous distention of the ileum not only stretches the ulcers to the verge of perforation or rupture of blood vessels, but it indicates abnormal fermentation processes, impaired absorption of nutriment and a parietic condition of the bowel. At the first indication of such distention, effort should be made to control it by change in diet, removal of constipation and the employment of antifermentatives. The total quantity of fluid food should be temporarily reduced to 30 or 40 ounces per diem, and for milk should be substituted broths, egg albumen mixture and predigested proteids. Very often this simple change is efficient, and if a milk diet is resumed after a day or two the milk should be peptonized. If the bowels are persistently constipated, in an uncomplicated case, there is no objection to supplementing the daily enema with small doses of bitter water. The intestinal abnormal fermentation may be best controlled by the use of salol (gr. v every three hours), creosote in keratin coated capsules (*m.* i-ii), or acetozone (grs. vi-xii) in a quart of water, to be drunk through the day. In more serious cases the expulsion of flatus should be favored by the insertion of a rectal tube, the application of turpentine stupes to the abdomen, and the internal administration of sodium sulpho-carbolate (gr. x) or turpentine (*m.* xxx in emulsion). The latter remedy still justifies the reputation it has borne for many years. Should frequent diarrhea be present instead of constipation, and the stools are foul, cleansing rectal irrigation with normal salt solution may be employed, for the risk of exciting increased peristalsis thereby, or possible hemorrhage, is less than that of persistent extreme distention and absorption of putrefactive intestinal products. Some clinicians advocate the routine employment of intestinal antifermentatives at the commencement of every case, but so many cases pursue a mild, uniform and unprotracted course without any treatment whatsoever beyond rest, good nursing, diet and cold water that I am unaccustomed to resort to medication without positive indication for it. When the mouth is kept thoroughly clean with hydrogen peroxide solution, so long as the tongue remains moist, the abdomen undistended and soft and the bowels respond successfully to enemata, there is little need of antifermentatives or any other drugs. The patient should always be given as much water as he will take, for it not only facilitates elimination by the kidneys, but dilutes to some extent toxic products in the blood, maintains the fluidity of the normal secretions and lessens the tendency to constipation if it exists.



Of the treatment by cold tub baths there is little new to be said, but certain facts cannot be emphasized too often. The Brand method, if employed at all, should be practiced with the courage of conviction, and not, as it so often is, in a half hearted manner, and it should be applied as a stimulus to the nervous system, rather than as a mere regulator of body temperature. There are guides more important than the thermometer in typhoid fever, for this instrument only records the average or temporary balance of heat gain and loss. Excessive heat production, if accompanied by proportionately rapid heat loss, may give a low thermometric record, and yet the obscure abnormal metabolism producing the increase in heat may be working great havoc within the body, a fact which may in some degree account for the exceptionally rapid emaciation in a certain class of cases in which the thermometric record remains low throughout, for heat production in the body is mainly due to chemical processes, its loss to physical processes.

In severe cases typhoid fever becomes almost a disease of the nervous system, so profoundly does the latter suffer, as evidenced by the early intense headache, disturbances of special sense, restlessness and insomnia, and the later prostration and lethargy or delirium, subsultus, tremor, carphologia, and profound digestive and nutritional disorder. It is this group of symptoms which are best controlled by arousing the nervous system through the sudden shock of cold and mechanical shock of friction. It has been well said that the Brand treatment might be appropriately called that by "rubbing" rather than "tubbing." Only the full bath admits of thorough friction of the skin, for in it the patient floats, and there is easy access to all surfaces of the body, which cannot be obtained in like degree or facility by such compromises as the sponge bath, bed douche bath, etc. Moreover, the suddenness of the shock of cold resulting from the cold plunge is far more stimulating than the influence of the lukewarm bath gradually cooled, as first advocated by Liebermeister many years ago. If one desires a vigorous reaction against muscular fatigue after exercise in health, it is the cold plunge which best gives it, not a gradually cooled tepid bath or sponging limited portions of the body at a time with alcohol and water. It is energetic friction which prevents shivering, keeps the skin in good condition, determines more blood to the peripheral vessels and helps to divert the patient's mind from discomfort. A feature of no little importance is the increased depth of respiration obtained throughout the cold plunge bath, which antagonizes the tendency to pulmonary congestion and bronchial catarrh. As a more remote, but no less important, effect the digestion improves and nutrition is maintained, so that extreme emaciation is rare, bed-sores and general furunculosis are practically unknown, the mind clears, the sensation of muscular soreness is alleviated, and the entire morale of the patient is benefited. Such are the real advantages of treatment by cold tub baths, and the fact should be emphasized that they may all be obtained through the stimulation of the nervous system, even without immediate lowering of the thermometric record. In every considerable group of typhoid fever cases are a few in which the cold tub bath fails to reduce the body temperature, and I have seen it even rise a little after a bath, while the patient showed marked improvement in other respects. I have records of cases in which sponge baths produced as decided an effect upon the temperature alone as



did subsequent "tubbing," but I have yet to see one in which their effect exceeded that of tubbing, and in the great majority of cases they fall far short of it in every way.

My present practice is to employ the tub bath at 75° Fahr. for fifteen minutes whenever the patient's temperature reaches or exceeds 102.5° Fahr., and insist upon gentle but continuous friction of the skin by two nurses during the entire bath. When first using this treatment at the New York Hospital some fifteen years ago, where I followed the practice of Dr. Peabody, we used water 10° or 15° Fahr. cooler, and previously we had given several years' trial to the Liebermeister graduated bath with poor results. Experience has taught the advantage of attention to detail in the treatment and the fallacy of rigid rules. Not a few patients do better with a bath of eight or ten minutes' duration than in one of fifteen minutes, or they may do better with water at 80° Fahr. than at 75° Fahr. Alcoholic stimulation should be given fully twenty minutes before the bath, to admit of its absorption before the cold is applied—a matter of no little importance. Shivering is less if the back be rubbed first, and the tub should be large enough and full enough to admit of readily floating the patient; on no account should he be left to shiver for several minutes in the tub while the nurse is preparing the bed for his return; he should be promptly and thoroughly dried when taken out of the tub and immediately left alone to sleep. These may appear trivial details, but anyone who has had personal experience in the tub realizes that they are not so, and they are often overlooked by those who state that they have applied this method of treatment, but gave it up on account of the patient's discomfort. I have met with far more complaint of the discomfort of cold sponge baths than tubbing among patients who have submitted to both.

No one claims that cold tubbing "cures" typhoid fever, or even aborts it, but it unquestionably fortifies the nervous system against the factors of the disease and enables the patient to endure what is at best a long and tedious siege, with very much less misery. The only indications for its suspension are the occurrence of hemorrhage or pneumonia, when cold sponging should be substituted. The method most emphatically does not induce hemorrhage, or produce relapse, or cause neuritis, or any other serious complication, as has been claimed against it. Its justification is shown in the remarkable unanimity of the hospital records throughout the country, which show a mortality among thousands of cases averaging from 7 to 7.5 per cent. in each institution where the treatment has been faithfully carried out for years, as against a previous death rate of double, often treble, that figure.

Enthusiasm for hydrotherapy should not lead one to deprive the patient of sufficient rest, and except in cases of a temperature protracted in the neighborhood of 105° Fahr. it is best to omit at least one of the three hourly baths at night, and if desirable to give a mild hypnotic. Of these the bromides, trional and codein, are the best. Trional is a perfectly safe, non-depressing drug, which either alone or in combination with codein works admirably in typhoid fever, insuring rest and controlling mild delirium, without the disagreeable features which attend the use of opium.

The occurrence of hemorrhage from the intestine we seem as power-



less to prevent as to forsee. One great difficulty in drawing conclusions as to the influence of treatment is the length of time which may elapse between the bleeding and the appearance of blood in the stools; thus the bleeding may have ceased spontaneously a dozen hours or more before the evacuation of the blood, or possibly blood may be voided long after a hemostatic has been given, the blood having lain in the colon or rectum. On the occurrence of hemorrhage, food should be withheld from the stomach, but if the hemorrhage is repeated at intervals for several days, as it often is, it is unwise to continue starvation, and one of the numerous predigested meat or peptone solutions should be given per os with egg albumen in small quantities, and rectal feeding may be resorted to. If not more than 2 or 3 ounces of a nutrient enema be given at once, it is not likely to excite peristalsis, and there is a chance that it may be absorbed, in part at least, although for fear of disturbing the bowel it may be unwise to attempt previous cleansing of the rectum. To secure rest of the intestine and lessen peristalsis it is best to keep the patient well under the influence of opium, and for this purpose the drug is more reliable when administered in the form of the tincture by the mouth than hypodermically. Ergot is of no value, nor have any of the so-called astringents or hemostatics proved infallible. It may be several hours before they enter the intestine, and it is difficult to administer them in sufficient strength. Turpentine has acquired some reputation as an intestinal hemostatic, and it may be of service, especially in cases accompanied by much tympanites and fermentation as previously mentioned. I had hoped much from the use of the suprarenal extract, and have seen cases in which it exercised apparent control, especially in the early hemorrhages, due rather to congestion than to the more serious later lesions of extensive ulceration, but in other cases it has signally failed, and, for reasons stated above, its apparent benefit may have been a coincidence. I have abandoned the common practice of applying cold locally to the abdominal wall. It is impossible for the cold to materially lessen peristalsis, and if it merely empties the superficial blood vessels, and by reflex effect raises the deep seated blood pressure, it is distinctly undesirable. It is, however, doubtful whether it has anything more than a negative effect. Within the past few years I have seen a considerable number of cases in which either transfusion or hypodermoclysis of normal salt solution was of marked value, and not a few in which it undoubtedly saved the life of patients in *extremis* from loss of blood. As in hemorrhage from other sources, the beneficial effect upon the heart action and pulse is immediate, whether it controls at once the bleeding or not. About 1,000 cc. should be given in any case in which the loss of blood produces marked constitutional symptoms of collapse, and repeated several times if necessary. At the Presbyterian Hospital we keep a supply of normal salt solution constantly warmed by a thermostatic burner ready for immediate use during the typhoid season.

The dietetic treatment of typhoid fever is always a fruitful topic of discussion and is one which can only briefly be summarized within the limits of this paper. It is, I think, generally conceded that a plain milk diet is sufficient and best for the majority of uncomplicated cases. The quantity given should depend upon the physique of the patient as well as the condition of his digestive organs. The robust laboring men, who constitute a large proportion of the typhoid fever patients seen in the hospitals



of this city, do very well with 60 or 70 ounces per diem, so long as the tongue remains moist and the excretions are normal. With less than this there may be too rapid loss of weight. The indications for reducing the amount have been mentioned above. Less vigorous patients may be given 40 to 50 ounces. Those who object to milk on the score of its taste often cease to do so after the first two or three days, or the taste may be modified by a very little coffee or caramel or by dilution with vichy. In some cases it is desirable to effect a compromise by giving, in alternation with the milk, beef, mutton or chicken broth, egg albumen, beef juice, or a little simple farinaceous food, such as arrowroot gruel, and orange juice may be allowed daily. As a hospital interne I was brought up to give nothing but milk to typhoid fever patients (whether they digested it or not) and to continue the exclusive milk diet for a week, or, in some cases, ten days, after the temperature became permanently normal, but in the light of wider experience I am convinced that such treatment unduly protracts convalescence. There can be no greater mistake than to treat all cases of typhoid fever by one dietetic rule, and a far better guide than the patient's temperature is his general condition. With a clean, moist tongue, a soft abdomen, normal stools, persistent hunger and the facies of convalescence, it is not only safe, but eminently desirable, to increase the diet so soon as the temperature reaches the normal, or even when it reaches 100° Fahr. This applies particularly to defervescing cases in which the temperature tends to oscillate daily for a week or more between 1° or 2° below and a degree above the normal line. Such food may then be given as soft cooked eggs, cream toast, junket, boiled rice, and in a day or two scraped beef. There is doubt whether a change in diet, properly supervised by the physician, is ever a cause of relapse. I would not deny that coarse food, such as may be surreptitiously offered by well intentioned but ignorant friends, may give rise to relapse, but it does not invariably do so, and, on the other hand, I have seen many relapses occur while the diet was still confined to milk. Milk is no longer fluid food on reaching the stomach, and undigested milk curds are as irritating to the intestine as almost any form of solid food, hence the frequent examination of the stools to detect their presence is most essential. Even should a relapse follow, it may be better for the patient to have had the benefit of increased nutriment for a few days, to better prepare him for it. The mistake is sometimes made of not recognizing the influence of complications or sequelae in greatly prolonging temperature. I refer to cases in which fever continues for forty, or perhaps fifty or more, days, and a phlebitis or furunculosis or some other complication is present. There are also exceptional cases, in which a moderately elevated temperature is protracted by starvation—I have sometimes seen genuine scurvy in such cases—and the temperature promptly regains the normal after increasing the dietary. The best principle for the dietetic treatment of this disease is to exercise alert observation of the changing conditions from day to day and be guided by the whole physiognomy of the case rather than by the thermometric record alone.

Many details of treatment of exceptional cases are necessarily omitted in this brief summary. I have purposely omitted the discussion of prophylaxis, prophylactic serum, of perforation, the treatment of which is purely surgical, and of the treatment of complications such as pneumonia,



thrombophlebitis, neuritis, the typhoid spine, etc. I am aware that I have stated no doctrines which are new to any of this audience, but with so important a malady an occasional review and summary of general principles may serve as a basis for renewed effort to seek more definite advancement in treatment. I have therefore advocated as such foundation principles: The use of intestinal anti-ferments rather than antiseptics; plentiful application of cold water, within and without; a milk diet, not too rigidly enforced or too long continued, and the possession of a mind open to conviction as to new methods, but meanwhile not misled by enthusiasm over alleged "specifics" for a disease from which fully 93 per cent. of patients recover with careful nursing, dieting and hydrotherapy.—*New York State Journal of Medicine, January, 1903.*

### APPLICANTS WHO PASSED EXAMINATION.

The following are the applicants who passed the examination before the State Board of Health at Kansas City, Mo., April 11th, 12th and 13th, 1904. Out of a class of 25 applicants, six failed:

W. B. Van De Sand	Villa Gatley
H. A. Dever	E. M. Phenix
C. E. Salyer	W. J. Robinson
Geo. J. Hanley	Clarence Capell
Blanche E. Converse	J. C. Owens
J. T. Dodson	John W. Parker
E. L. Mumma	Jno. A. McMaster
R. F. Williams	Lester D. Riggs
Winnie M. Sanger	Chas. E. Yates
	J. Sam Brown

The following are the applicants who passed the examination before the State Board of Health at St. Louis, Mo., April 19th, 20th and 21st, 1904. Out of a class of 69 applicants, 16 failed:

Wm. E. Leighton	C. W. Hamlin
J. F. Shoemaker	Elise C. Arendt
E. A. Hicks	R. M. James
J. A. Cline	B. C. Linebaugh
Eli Back	R. A. Woolsey
F. L. Finley	W. F. McMahan
A. R. Poole	C. R. McDonald
O. O. Giberson	G. O. Webster
J. T. Price	Francis Kinsch
Chas. W. Reed	A. E. Kidd
L. L. Short	G. L. Puckett
O. E. Amos	W. H. White
C. A. Archer	Eugene Bowers
G. H. Bragdon	Geo. J. Hanley
Lewis E. Inman	T. D. Doan
Everett R. Gose	J. W. Shankland
Frederick Bechtler	Kathryne Sutton



A. A. Perry  
 Chas. C. Scheidel  
 Fred E. R. Krug  
 Julius T. Freund  
 Geo. W. Tontz  
 E. E. Hill  
 A. P. Shellman  
 W. L. Clapper  
 S. T. Brownfield

Winfred Goldsberry  
 Lydia E. Vierling  
 T. J. Stewart  
 R. A. Henderson  
 C. E. Jenkins  
 Harry L. Jones  
 Homer Beall  
 R. C. Strode  
 Paul E. Coil

Ten midwives appeared before the State Board in St. Louis and took the examination. The following number passed:

Margaret Pierce  
 Effie James  
 Annie Brown

Marie McIntyre  
 Catherine Schultz  
 Rebecca Winner

Emilie Schlisinski

### REPORT OF WORK IN FOOD LABORATORY.

BY H. E. BARNARD, CHEMIST.

Since the publication of the January number of the *Sanitary Bulletin*, the collection and analysis of samples of food products has been actively continued. In the absence of a regular food inspector we have made personal collections of food samples carried in stock by the retailers in the cities of Manchester and Concord, and in several of the larger towns. This necessarily limited inspection, confined to but a small portion of the State, does not bring the work of the laboratory before the retailer and consumer in our other cities and towns as prominently as we should like. The samples of food collected, however, probably represent fairly well the standard of quality of food products offered for sale throughout the State. The results of our analyses bear out only too well the often repeated statement of the salesmen of the wholesale houses that "New Hampshire is a dumping-ground for adulterated foods." We are glad to say that the enforcement of our Pure Food law, which has remained so long unobserved on our statute books as to become a dead letter in the eyes of the manufacturer, has aroused to a remarkable extent his latent conscience, as well as that of the wholesaler and retailer, so that there now seems to be an honest desire on their part to comply with all the rulings of the State Board of Health concerning our law.

By correspondence and personal inquiry we have brought the laboratory in touch with most of the houses that cater to the New Hampshire trade. In this way, and through the distribution of information regarding the brands of adulterated foods through the *Sanitary Bulletin*, we have accomplished much in an educational way, and laid a foundation for a gradual improvement in the quality of the food products on our markets.

Of the 290 articles examined, 139 were adulterated, or varied from the legal standard. This is equivalent to an adulteration of 47.9 per cent. It must be remembered, however, that in collecting samples for analysis care was taken to collect articles of a suspicious character. Therefore the extent of adulteration of all food products is not shown by this figure, and is represented by a much smaller percentage.



## CANNED FRUITS, JELLIES, AND JAMS.

Under this heading is included all the products made from fruit and sugar, either cane or glucose, and including fruit butters, preserves, fruit juices and syrups. As stated in our last report the base of most of these goods is apple juice. This apple juice, sweetened, colored, flavored, and preserved, finds ready sale in enormous quantities as raspberry, strawberry, and current jellies and jams. A recent addition to this class of goods is a "pie filling," which is sold largely to the baker trade. It is similar to the imitation butters and jams in appearance and composition, and consists of a mixture of apple juice, starch, butter, eggs, glucose, and a small amount of pulp or grated rind of the fruit represented. This product is found on our markets labeled "Lemon Preserves," and is a typical illustration of misrepresentation. The ruling of the State Board of Health on this subject is as follows:

*Fruit jellies, fruit butters, preserves, canned fruits, fruit conserves, confections, fruit juices and syrups, etc., must consist of the fruit specified on the label, preserved only with cane sugar, with or without the addition of glucose, and must not contain artificial flavors, coloring matters, or preservatives. If such articles contain any substitute for the fruit, or any injurious material to make bulk or weight, any artificial flavor, color, or antiseptic, or any substance not naturally occurring in such fruit except spices or other wholesome natural flavoring materials, they shall be considered to be adulterated.*

## CANNED GOODS, MISCELLANEOUS PRODUCTS.

The majority of canned goods, including canned corn, tomatoes, beans, soups, and prepared foods, such as clam chowder, corned beef hash, baked beans, etc., are, for the most part, free from adulteration. The use of preservatives is occasionally noted, but in a lesser degree than formerly. Canned meats are usually pure products. The frequent statement that the high color of canned meats is due to coloring matter is undoubtedly an error. The finely ground meats, like deviled ham, veal loaf, etc., occasionally contain borax, presumably added to prevent souring while in the process of manufacture.

## COFFEE, CHOCOLATE, AND COCOA.

The articles of this class have been pure. The sale of adulterated coffee is apparently a thing of the past, although the misbranding of cheap Central American and Brazilian coffees as genuine Mocha and Java is very common. Cocoas and chocolate are subject to adulteration with starch and flour and undue amounts of the outer covering of the cocoa bean.

## MAPLE SYRUP.

If every farmer in New Hampshire owned a grove of maple trees and made each spring all the maple sugar and syrup possible, the amount produced would hardly equal the quantity sold each year as pure maple sugar or syrup. It is undoubtedly true that even in New Hampshire, a large producer of maple products, fourth-fifths of the sugar and syrup sold in our markets is wholly or in part fraudulent. An inspection of three maple syrup bottling houses in the city of Manchester which were producing large quantities of "pure maple syrup," showed that their product was a dilute cane syrup colored with caramel, to which about 20 per cent. of melted maple sugar had been added. Another manufacturer had



dispensed with maple sugar entirely, and was branding a mixture of cane syrup and corn syrup as "Pure Maple Syrup." A sample of "Cream Maple Sugar" selling for a high price as a superior article proved to be brown sugar and glucose. It matters not whether the maple syrup is made direct from the unadulterated sap of the maple tree or by remelting a sugar which has been made from a syrup, the product of such an undiluted sap. We cannot consider, however, every syrup a maple syrup because it may have been made from what purports to be a maple sugar. Our analyses have shown that syrups bottled by houses of the highest reputation and guaranteed by them to be pure undoubtedly have been made from adulterated sugar.

#### SPICES.

Our analyses show that the present method of selling spices in small cartons or packages bearing the trademark and name of the grinder has very largely driven out adulterated goods. Bulk spices are still frequently adulterated with make weights such as wheat flour or ground bark. One sample marked "Gold Label Mustard" consisted of wheat flour and ground mustard hulls colored with tumeric.

#### TOMATO KETCHUPS.

By far the greater number of the brands of tomato ketchups are adulterated either by coloring matter or preservatives, or both. Recent analyses, however, lead us to believe that certain houses are now bottling a tomato ketchup free from added color and preservatives. While it is claimed by other manufacturers that goods so packed will prove objectionable to the consumer because of their lack of color and liability to ferment, we do not believe that the public will allow its natural prejudice in favor of pure foods to be overcome by the absence of the high color. If the open bottle is put in a cool place there is no danger of its fermenting before it is used up.

#### VANILLA EXTRACTS.

A true vanilla extract is made by macerating the vanilla bean with sugar and extracting the mass with diluted alcohol. Adulteration of vanilla extract consists of substituting, wholly or in part, the inferior and cheaper Tonka bean for the vanilla bean, or the addition of the artificial coumarin to weak extracts of the true bean or even preparing solutions of artificial vanillin or artificial coumarin in dilute alcohol, colored with caramel or coal tar dye to represent the true extract. As in the case of lemon extracts we have ruled that the only vanilla extract salable under our law is a pure extract prepared according to the Pharmacopoeia formula. Compounds bearing on any part of their label the word "Vanilla" are adulterated.

#### LEMON EXTRACTS.

In the analysis of lemon essences or extracts we have required that at least 5 per cent. of pure lemon oil should be present. Many terpenless lemon extracts are sold as pure extracts, but as they contain no lemon oil must be considered to be adulterated. The sale of compound lemon extract is not allowable. The value of an extract for flavoring purposes depends upon the amount of pure lemon oil present and the compounding of oil of lemon grass, citral, and dilute alcohol makes a fraudulent product.



# BULLETIN

## OF THE

# MISSOURI STATE BOARD OF HEALTH

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### **"THE STATE BOARD OF HEALTH URGING NEEDED LEGISLATION."**

The North Missouri District Medical Association met in Kirksville, Mo., at its regular annual meeting June 16th and 17th, there being a good attendance. Many good papers were read and discussed, the one occupying the greatest part of discussion being the address on contagious and infectious diseases. The essayist urged the importance of needed legislation; as the law stands on the statute books to-day, on account of its inefficiency, the State Board, as well as the subsidiary Boards of Health of our State are greatly handicapped. The speaker dwelt upon the importance of having uniform regulations governing all subordinate Boards—county and municipal. After a very thorough and free discussion of this subject, Dr. W. P. Rowland, of Bevier, Mo., introduced a resolution, which in substance was as follows: "Resolved, That this Association adopt the sentiments expressed by the Secretary of the State Board of Health, and that we pledge ourselves to stand to and assist in the passage of a bill, such a one as the State Board of Health may prepare for legislation. We furthermore pledge ourselves to use our best efforts and influence in securing the support of our representatives from the various counties to this end. We have confidence in our State Board of Health that they will make every effort to prepare a bill which will be of the greatest import to the people of our State. They have been in this active work for nearly four years and they are better prepared to know the needs and wants of the people than it is possible for us to know. It is further resolved that the Secretary of this Association be instructed to communicate with all the members of this body, requesting their concurrent action in this matter," which was unanimously adopted.

Our esteemed friend, Prof. John R. Kirk, President of the State Normal School at Kirksville, Mo., met with our Association and entered into the spirit of the work in discussing the above question. He stated in substance that the school teachers of our State were not suf-



ficiently informed on this great question—that they did not know how to proceed when there was an outbreak of contagious and infectious diseases in their schools, and urged that this question be not dropped until there was sufficient legislation on our statute books that would enable us as public officials and sanitarians of this State to protect the people from contagious and infectious diseases. He also urged the importance of these questions being agitated in schools, and suggested that at the proper time an invitation be extended to the members of the State Board of Health to attend a public assembly of teachers of the State. He also pledged himself personally to bring this matter before the annual meeting of the Teachers' State Association, which convenes in Columbia in December, and urged the membership of this Association to communicate with the representatives of the various districts to pass such a bill as may be prepared by the State Board of Health. I will state in this connection that the President and Secretary of the State Board attended the Southwest Missouri Medical Association at Springfield, Mo., and a like resolution was introduced and unanimously adopted by this Association. There is a tendency on the part of some people to father legislative bills and urge their introduction and passage by the Legislature; hence at each of our general assemblies there are many bills introduced from many sources to regulate the practice of medicine, to regulate Boards of Health, etc., and the majority of them are of no practical value and they have a tendency to confuse the members of the Legislature because of the various ideas expressed in these bills, that they become thoroughly disgusted, and the result is, or has been, that we were unable to procure legislation which is of material benefit to the general public. Therefore the law under which the State Board of Health works makes it the duty of the State Board of Health to present such needed legislation to the members of both Houses, that the bills may be passed by the Assembly coming from a source that has had an opportunity to know the needs and wants of the people of our State.

Now, making a slight digression from the subject, I wish to express myself freely with regard to the class of persons composing the subsidiary Boards of Health in our State. At present our County Boards of Health are composed of the members of the County Court, with a physician of their own selection, and this constitutes a County Board of Health. To this arrangement I wish to enter an earnest protest. There is but one class of citizens who are capable to act in this capacity—the physician—and when a law is so constructed that it places members outside of the medical profession on a Board as important as the County Board of Health—persons ignorant of medicine, persons ignorant of sanitation, ignorant of quarantine rules and regulations, absolutely ignorant of the requirements necessary for the protection of the health and lives of the citizens of a county—the act unquestionably needs amending. Another objection to this existing law is that it is impossible to get the co-operation of people not versed in scientific prophylactic medicine. They will quibble and question the advisability of spending a few dollars for the protection of the people



against the invasion of contagious and infectious diseases. They do not seem to realize, as does the educated physician, the importance of the execution of good, sanitary and quarantine measures. Therefore, in lieu of the present law, I am decidedly in favor of having a County Board of Health composed absolutely of physicians—the best educated physicians in each county. I would suggest that there be not less than three on this Board, one of which would be President and one the Secretary, and that the President be an inhabitant of the county seat of the county, and the other two reside in the western and eastern or northern and southern parts of the county, as the county may be divided in districts. Then the expense of a County Board of Health can be greatly minimized, because it would not be necessary for one of the members of this Board to consume the entire day in making an investigation. I am furthermore in favor of these physicians receiving proper compensation for their services, as any other county official—because it would be impossible for us to get a county clerk or a county judge to act in the capacity of such without proper compensation, and, to my mind, this is vastly more important than any other county official. We have thoroughly tried the County Boards composed of the laity, and, in many instances, we have found them to be an absolute failure. Where it has succeeded it has been where the county court relied entirely upon the county physician and his judgment.

In summing up, I want to say: Let us have a County Board of Health which is and should be a subsidiary Board to the State Board of Health, composed absolutely of physicians—the most learned in each county. These sanitarians and safeguards of the health and lives of the people of our State are of the utmost importance. Why can not Grand Old Missouri, the fifth State in the Union, instead of being as it is to-day, behind educationally in sanitary science, occupy the same position as it does in its commercial relation? This is only a matter of education, and as soon as the people become aroused to the importance of proper organization under proper laws under the Boards of Health of our State, county and municipality, then they will realize, and not until then, the great good accomplished by such united effort, that the people of our State will be constantly encouraging the State sanitarians to push forward their noble and glorious work.

In conclusion, let me urge the profession of our State to work and pull together and get our representatives to see and realize the importance of good, wholesome sanitary laws. Make it a point to see the members of the Assembly before they leave home and get a pledge from them and the victory will be won. My experience with legislators is that they are always ready to legislate for their constituents, and this point explained to them, there will be absolutely no trouble in getting them to pass such a bill. So let us hope that every physician whose body is thrilled with the proper impulses will do his duty to the people of his community.



## **PRESENT ATTITUDE OF THE NATIONAL GOVERNMENT TOWARD SANITARY SCIENCE.**

By Walter Wyman, Surgeon-General, U. S. Public Health and Marine Hospital Service.

The present attitude of the National Government toward sanitary science does not differ, so far as I know, from its attitude in the past, but its activities are greater than heretofore, by reason of more favorable opportunities. So far as I can learn, the attitude of the general Government has always been, and is, friendly, this friendliness being manifested to a degree commensurate with its powers under the Constitution and with the wisdom of its sanitary advisers. Congress is neither indifferent nor niggardly when it is assured that the measures proposed for the advancement of science are clearly within its constitutional prerogatives, and that they have been judiciously advised. It was formerly the complaint that Congress was more liberal toward sanitary science in relation to the lower animals than in its relation to human beings; but the imputation was unjust, the reason for apparent neglect of sanitary science as applied to human beings being a want of harmony among the special advocates of sanitary measures. Congress and State Legislatures have been confused by the conflicting views of those interested in sanitary measures, and when this confusion exists legislative action is naturally deferred. Hence the necessity of most careful consideration and unanimity of action on the part of those who seek to obtain legislative action of this character.

So far as national legislation is concerned, I am pleased to state that the desired harmony among those interested in the attitude of the general Government appears recently to have been attained. This attainment will be referred to again. But I propose now to take a general survey of the field of National administration, and to briefly enumerate the various branches of the Government whose labors, directly or indirectly, advance our sanitary knowledge, it being understood that a number of governmental institutions have been established primarily for other objects than sanitary science, which, nevertheless, are powerful factors in its advancement.

For example, one might, on first thought, imagine that the great Interior Department of the United States Government has but slight relation to this subject, yet, through the Hydrographic Bureau of the Geological Survey, our knowledge of streams and the influences which affect water supplies is greatly enhanced, and is of value from the standpoint of sanitary science. The matter of irrigation and conservation of water supplies, to which so much general attention is at present being given, and which comes within the special administrative duty of this same bureau of the Interior Department, has also a direct relation to sanitation.

Another bureau of the Interior Department—namely, the Bureau of Education—through its bulletins on subjects such as "The Sanitary Condition of School Houses" and "The Means of Spreading the



Knowledge of School Hygiene Among the People," further illustrates the helpful attitude of this Department. In the opening of new lands to settlement in the several territories the Interior Department has control of funds derived from the sales of public lands with a view to their expenditure for assurance of good water supply and other sanitary provisions requisite for the towns and cities which develop so rapidly.

In the new Department of Commerce and Labor is the Census Bureau, some of whose compilations are of great value to sanitary science, and also the Bureau of Labor, which, though engaged primarily in acquiring and diffusing information on other subjects connected with labor, nevertheless has issued valuable treatise, such as "The Housing of Working People," "The Slums of Baltimore, Chicago, New York and Philadelphia," "Factory Sanitation," "The Effect of Various Industries Upon the Working People," and other publications having a bearing upon the great subject of sanitary science.

The Navy Department, through its Bureau of Medicine and Surgery, maintains in Washington a medical school for the advanced instruction of its medical officers, with which is connected a museum of hygiene, in which are illustrated many principles of sanitary science.

The War Department, through the office of the Surgeon-General, conducts a school for post-graduate instruction of its officers, in which special regard is paid to sanitary work, and in the scientific investigations made for the benefit of the army, the general public has a direct interest, and profits thereby, as illustrated in the valuable work of Reed, Carroll and Craig, with regard to yellow fever and malaria. The library of the Surgeon-General's office is of great value to those interested in sanitation and hygiene, as well as in other branches of medicine and surgery.

Very important stimulus is given to sanitary science by the Engineer Corps of the army. Its members are skillful sanitary engineers, as was well illustrated by the sanitary work in Havana at the close of the Spanish-American War—a work begun by General Ludlow, an engineer officer, and continued by Colonel William M. Black, whose sanitary engineering, both as regards the city and harbor of Havana, deserves the highest commendation. To the skill and devotion of Colonel Black may be justly attributed, in large measure, the sanitary regeneration of Havana.

The attitude of the State Department to sanitary science is illustrated by the cordiality with which the Secretary of State encourages representation by this Government at the international congresses of medicine, surgery and hygiene, to which the United States is frequently requested by foreign governments to send delegates. Further, under the act of Congress approved February 15th, 1893, the United States consuls throughout the world are directed to transmit to their home government sanitary information and reports, and to this requirement there is a very willing and generous response on the part of the consuls.



Quite recently, by request of the Public Health and Marine Hospital Bureau, through the Secretary of the Treasury, the Secretary of State has issued circular instructions directing the consuls at some forty-five foreign cities in Europe, India, South America, Australia and Canada to obtain and forward the laws and regulations requiring the vacation of insanitary dwellings and the demolition of such buildings. This information is desired in the interest of the movement which is now going on in many of our cities looking to the absolute destruction of residences that, from a sanitary standpoint, are unfit for human habitation.

In the Department of Agriculture several bureaus are directly or indirectly concerned with hygienic matters, and, therefore, with the advancement of sanitary science. The Bureau of Animal Industry, with its force of about 1,400 officers and employes, investigates the existence of communicable diseases in animals used for food by man, and make special inspection with regard to the same when entering into interstate and export commerce. It studies dairy products and methods and the milk supply of cities and towns and the various laws relating thereto. The Weather Bureau supplies climatic data useful to the health seeker and the settler. The Bureau of Plant Industry studies the poisonous plants and their antidotes, and the cultivation of drugs and medicinal plants. The Bureau of Chemistry, through its food laboratory, studies the composition, nutritive value and character of adulterations of human foods, and investigates the food preservatives and coloring matters to determine their relations to health. It also studies the composition and adulteration of drugs. The Division of Entomology studies the insects in relation to diseases of man and animal—a most important feature of modern scientific research with regard to the health of man, as instanced by the serious role which the mosquito has in recent years been found to play in the transmission of certain diseases.

But the attitude of the National Government toward sanitary science is particularly and most directly shown by the establishment by Congress within the Treasury Department of a Bureau of Public Health and a Hygienic Laboratory, devoted in the words of the law, "to the investigation of contagious and infectious diseases and matters relating to the public health." No broader foundation could be given by legislative enactment than is conveyed by the legislative words just quoted. The work of the Hygienic Laboratory of the Public Health and Marine Hospital Service is too well known, through its scientific bulletins, to require a detailed description. Suffice it to say that it is carrying out the intent of Congress so far as its present equipment will permit. It has four distinct divisions: First, bacteriology and pathology; second, medical zoology; third, pharmacology; fourth, chemistry. A new laboratory building has just been completed, and other buildings will be asked for from time to time as their necessity becomes demonstrated. One feature of this laboratory is its Advisory Board for consultation with the Surgeon-General and Public Health and Marine Hospital Service, composed of the director



and representatives of the Medical Department of the army, the navy, the Agricultural Department and representatives from five of the principal laboratories of the United States not connected with the Government. It is believed that through this board co-operation will be secured with regard to the character of investigations to be made by the various principal laboratories of the United States. This hygienic institution is a natural outgrowth of the public health work of the Marine Hospital Service, which work itself has naturally followed the performance of its quarantine functions, these latter being imposed on the service because of its familiarity with ships and sailors.

On July 1st, 1902, the name of the Marine Hospital Service was changed to that of the Public Health and Marine Hospital Service, and its functions as relating to sanitary science were vastly increased. In the Administrative Bureau established by this law, one of the most important divisions is the Division of Scientific Research. In the same law provision was made requiring the Surgeon-General of the service to call a conference of the boards of health of all the states and territories at least once each year, thus bringing together the State and National health organizations. It is through this conference that the desired harmony among those interested in the attitude of the general Government toward sanitary matters has been attained, and which was referred to at the beginning of my remarks. It is confidently expected that this harmony will be maintained. Additional conferences, called either on request of the states or when the Surgeon-General deems it necessary, are provided for in the same law.

Another law recently passed requires an examination of all the establishments in the United States where vaccine is produced, or curative serums and antitoxins, to insure scientific accuracy and purity in their productions. The Secretary of the Treasury issues licenses to these establishments, or refuses to issue a license, basing his action on the reports of inspection made by officers of the Public Health and Marine Hospital Service. Even foreign establishments must be thus examined and licensed in order to sell their products in the United States.

Mention should also be made of the Yellow Fever Institute, founded for the continuous investigation of yellow fever and organized to utilize the findings and personal services of any member of the medical profession at home or abroad. This institute is operated by the Public Health and Marine Hospital Service under authority of the Secretary of the Treasury.

The interest of the National Government is further shown by the detail of medical officers to attend international sanitary conferences, such as the one now in progress in Paris relative to the bubonic plague, and the Government of this nation has joined with the governments of the other republics of America in providing for annual sanitary conventions and the establishment of an International Sanitary Bureau of American Republics permanently located in Washington.

A strong public sentiment is an all-important factor in the development of scientific sanitary knowledge and better sanitary conditions in our towns and cities.



### SCARLET FEVER.

William L. Baum, M. D., Chicago.

Professor of Skin and Venereal Diseases, Post-Graduate Medical School of Chicago; Attending Physician on Contagious and Infectious Diseases, Cook County Hospital; Dermatologist, the Chicago and German Hospitals.

During the years 1896 to 1903 the following cases of scarlet fever were under my observation at the Cook County Hospital:

Number of cases, 628; males, 307; females, 321; deaths, 44.

**Complications.**—Suppurative otitis, 11; nephritis, 47; pneumonia, 19; arthritis, 2.

**Mixed Infections.**—Number of cases, 142; deaths, 17; diphtheria, 96; measles, 29; diphtheria and measles, 1; variella, 13; parotitis, 3.

It will be seen from the above table that the mortality was a little over 7.07 per cent of all the cases treated. In the mixed infections the mortality was 11.9 per cent. It will be noted that among the complications, suppurative otitis media occurred eleven times, or in 1.7+ per cent of all cases. In about 35 per cent of the cases there was pain in the ear. The mild or catarrhal form of otitis media, according to Bader and Guinon,<sup>1</sup> is very common, occurring in 33 per cent of the cases.

Holt<sup>2</sup> has found it in 75 per cent of those cases accompanied with severe throat symptoms.

Nephritis, in which there were present albumin, casts of blood cells, occurred in forty-seven cases, or in 7.6+ per cent of all cases. Albumin was present in over 37 per cent of the cases during the early stages of the disease.

In three cases there was present at the beginning, or on the second day of the eruption, a severe septic nephritis, with much albumin and many casts. These cases were all fatal.

Acute lobar pneumonia was present in nineteen cases, mostly involving the upper lobes. Henoch<sup>3</sup> states: "The mucous membrane of the bronchi and the parenchyma of the lungs are excited by inflammatory influences far more frequently than we usually suppose. Not only catarrh, but more or less extensive broncho-pneumonia occurs in the first and second weeks of the disease. These conditions are frequently overlooked, however, because a whole series of synchronous severe typhoidal symptoms disguise them and divert the attention of the physician." We found bronchitis and broncho-pneumonia in nearly all severe cases.

Severe arthritis was present in two cases; in one of these cases, a girl ten years of age, the swelling of both elbow and wrist joints appeared on the tenth day of the disease. It was ushered in by a chill, rise of temperature to 104° and great tenderness in the joints. The symptoms increased in severity up to the twenty-eighth day of the disease; the joints became soft and fluctuating, the aspirated fluid was filled with streptococci and the child finally died of a general sepsis. There was also present nephritis.



In twenty-one other cases there was slight swelling of the joints, but unaccompanied by any other severe symptoms.

Among the mixed infections diphtheria was the most common. Cultures are made from the throats of all patients admitted to the contagious and infectious ward of the Cook County Hospital. In the 628 cases of scarlet fever, the Klebs-Löffler bacillus was found ninety-six times, or in 15.2 per cent of all cases. It is well, however, to state that in many cases it appeared as a purely secondary infection during the period of early convalescence and after exposure. Jurgensen<sup>4</sup> answers some points in regard to diphtheria complicating scarlet fever as follows: (1) Is anyone able, by simply inspecting the genuine diphtheritic membrane, to differentiate it from the membranes that occur in a scarlatina that is not complicated by diphtheria? In many cases, yes. In diphtheria these are firm, compact membranes of a grayish yellow color, that can be separated in their entirety. In scarlatina the membranes are softer, looser, separable only in portions and of a more brownish color. To this I cannot agree, for in many of the cases of the latter type the Klebs-Löffler bacillus was found, and not only this but from these cases others were infected with diphtheria. (2) A deep destruction of the tissues in the vicinity of the parts primarily involved is more rare in diphtheria than in scarlatina. (3) Obstruction of the larynx by a membrane formation is a comparatively rare occurrence in scarlatina, and still more rare is a croupous exudate on the mucous membranes, extending deep down into the air passages. (4) I do not wish to lay too much stress on the fact that in the involvement of the larynx by a diphtheritic inflammation from the pharynx accompanying scarlatina the clinical symptoms have a characteristic type. (5) The paralysis following genuine diphtheria is absent in the pharyngeal diphtheritis accompanying scarlatina. (6) As to the time required by the course of the disease, Henoch declares in regard to the condition that he calls the necrotic inflammation typical of scarlatina, that it appears, as a rule, on the third or fourth day after the beginning of the disease; this holds good only for the cases that are moderately severe. In severe cases it may be present even in the course of the first twenty-four hours.

Corlett<sup>5</sup> states that among contagious and eruptive fevers none presents so many varied types as scarlet fever, ranging as it does from the mildest form, scarlatina simplex, or benigna, to the most malignant type, scarlatina maligna, called by the French foudroyant. Between these two extremes we find an almost endless variation from the normal, one shading gradually into the other; so that any sharp differentiation into groups is quite impossible. It is this constant variation in type which renders the differential diagnosis of scarlet fever from other disease processes so difficult.

In differential diagnosis, drug eruptions, as caused by belladonna, quinine, copaiba, chloral, opium and the coal tar derivatives, must be taken into consideration, for not only are the conditions for which they are prescribed accompanied by fever, but the drug eruptions frequently start on the face and locations characteristic also of the scar-



let fever eruption. Toxic erythemata occur in the course of septic infections, which are frequently mistaken for scarlet fever eruptions. In both of the above conditions the enlargements of the glands in scarlet fever, as shown by Schamberg, are of diagnostic value. Cases of rubella, or German measles, are frequently mistaken for mild scarlet fever, and it is with great difficulty that the diagnosis is arrived at. In the scarlet fever the rash is made up of minute, brightly injected puncta, slightly elevated and closely studded together, forming a uniform of finely mottled surface, while the rash in rubella is always measly, and never becomes confluent.<sup>5</sup>

Other cases which have been sent into the hospital as scarlet fever proved to be erysipelas, cerebrospinal meningitis, measles, tonsillitis with erythema, influenza and one case of septic typhoid fever.

It is strange that where so many children who had recently undergone surgical operations were exposed to the infection only in two instances did scarlet fever develop among them. Hoffa<sup>6</sup> believed that scarlatina can originate from wounds, and quotes Von Leube, who infected himself during an autopsy on the cadaver of a case that had died of an unusually severe attack of scarlet fever.

### ETIOLOGY.

Since the report of Klein,<sup>7</sup> in which he was convinced that the Marylebone epidemic of scarlet fever in London could be traced to the milk supply, and found the streptococcus taken from the visicles on the udders of cows, which he believed were suffering from true bovine scarlatina, there have been many others, notably Fiessinger,<sup>8</sup> who believe that they have discovered the true etiologic factor. Class<sup>9</sup> describes a diplococcus. His organism is a non-capsulated diplococcus, appearing occasionally, though rarely, in streptococcal form. It is polymorphous in character, attaining not uncommonly, under certain conditions, an unusual size. It is said to be constantly present in the pharynx in the scarlatinal angina. Baginsky and Sommerfeld<sup>10</sup> have described a streptodiplococcus very similar to the one described by Class, but have found so many similar organisms in the throats of patients suffering from the infectious diseases that the results are inconclusive.

Weaver<sup>11</sup> made many cultures from the throats of scarlet fever patients and reaches the following conclusions:

1. The bacteria obtained in cultures from the skin, epidemic scabs and the surface of the tonsil are the same as those found in the same locations in health, and no one of them is constantly present, except the streptococcus in the throat.

2. Because of the numerous cocci which grow in such cultures and which appear in groups of two and four, or bunches of the same, under the microscope, it is impossible to identify them except by a complete study in pure cultures.

3. Cultures made by inexperienced persons, or by those who do not fully appreciate the importance of avoiding the tongue, are especially apt to contain large diplococci or sarcinae.



4. The streptococcus is present on the tonsils of scarlatina patients in enormous numbers in almost all cases.

Hektoen,<sup>12</sup> in a series of bacteriologic examinations of the blood, during life, in scarlet fever, with special reference to streptococcemia, comes to the following conclusions:

1. That streptococci may be found in the blood of cases of scarlet fever that run a short, mild and uncomplicated clinical course.

2. That streptococci occur with relatively greater frequency in the more severe and protracted cases of scarlet fever in which there may also develop local complications and clinical signs of general infection, such as joint inflammation, but even in the grave cases of this kind spontaneous recovery may take place; and finally,

3. That streptococcemia may not be demonstrable in fatal cases of scarlet fever.

The theory that scarlet fever is a streptococcus disease does not seem to receive any direct support from this work.

After a study of the literature bearing on the subject of the bacteriology of scarlet fever and an endeavor to verify the works of the investigators, one is forced to the conclusion that it has not yet been shown that any one of these organisms is the true etiologic factor in scarlet fever.—Journal of the American Medical Association, October 10, 1903.

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### SUMMER DIARRHOEAS OF INFANCY AND THEIR PREVENTION.\*

About one-fourth of all children born in the civilized world die before they reach five years of age.

About one-half of all deaths among infants are due to diarrheal diseases.

These diseases prevail almost exclusively during the hot months of summer, consequently they are known as the summer diarrheas.

They are confined to children that are fed wholly or in part on cow's milk. Failure of the mother to nurse her child during the first year of life greatly increases the danger of illness from the summer diarrheas.

The summer diarrheas of infancy are cases of milk poisoning. Cow's milk becomes poisonous on account of germs which get in it and multiply, producing highly poisonous substances.

The prevention of the summer diarrheas and the fearful mortality due to them consists in giving attention to the milk with which children are fed. If the cow giving the milk be healthy, and germs be kept out of the milk after it is drawn, it will not cause diarrhea. The following rules should be followed in securing and caring for milk.

1. The cows should be healthy, and the milk of any animal which seems indisposed should not be mixed with that from the perfectly healthy animals.

2. Cows must not be fed upon swill, or the refuse of breweries or glucose factories, or any other fermented food.



3. Cows must not be allowed to drink stagnant water; but must have free access to pure, fresh water.

4. Cows must not be heated or worried before being milked.

5. The pasture must be free from noxious weeds, and the barn and yard must be kept clean.

6. The udder should always be washed before the milking.

7. The hands of the milker should be clean.

8. The milk should be received in a clean, scalded pail.

9. The milk must be at once thoroughly cooled. This is best done by placing the milk can in a tank of cold spring water or ice water, the water being of the same depth as the milk in the can. It would be well if the water in the tank could be kept flowing; indeed, this will be necessary unless ice water is used. The tank should be thoroughly cleaned every day to prevent bad odors. The can should remain uncovered during the cooling, and the milk should be gently stirred. The temperature should be reduced to 60° F. within an hour. The can should remain in the cool water until ready for delivery.

10. In summer, when ready for delivery, the top should be placed on the can, and a cloth wet in cold water should be spread over the can, or refrigerator cans may be used; at no season should the milk be frozen, but no buyer should receive milk which has a temperature higher than 65° F.

11. After the milk has been received by the consumer, it should be kept in a perfectly clean place, free from dust, at a temperature not above 50° F. Milk should not be allowed to stand uncovered, even for a short time, in sleeping or living rooms. In many houses in the country and villages, and occasionally in the cities, the drain from the refrigerator leads into a cesspool or kitchen drain. This is highly dangerous; there should be no connection between the refrigerator and any receptacle of filth. The refrigerator waste should discharge in the open air.

12. The only vessels in which milk should be kept are tin, glass or porcelain. After using the vessel, it should be scalded and then, if possible, exposed to the air.

13. When ordinary market milk is used in feeding infants it should be sterilized.

14. The details of sterilization can be learned only by practical demonstration, and the family physician should be asked for instruction. Unless sterilization is scientifically carried out it is worthless.

15. A milk which has already an abundant germ growth in it cannot be made a safe food for infants by sterilization, because while the heat employed in sterilization kills the germs it does not destroy the poisons already generated by the germs.

16. After sterilization, the bottles of milk should be kept at a temperature below 50° F., until one is needed for the child, when the bottle with its contents should be warmed by being held for a few minutes in water until it is brought near the temperature of the body.

17. Should an infant develop a diarrhea, discontinue the admin-



istration of milk in any form and immediately seek the advice of a competent physician.

18. The family physician alone is competent to decide what modifications should be made in cow's milk to render it a suitable food for a given child.

**The sterilization of milk for infants:**—For those who cannot conveniently consult a physician, the following details for the sterilization of milk are given: It should be understood that only fresh milk, obtained according to the rules already given, is fit food for infants, even after sterilization. Obtain one-half dozen or more nursing bottles with suitable wire holder, kept by druggists. The bottles should be placed in a kettle of soft water, a heaping teaspoonful of the bicarbonate of soda dissolved in the water in order to render it fully alkaline, and then the bottles boiled for half an hour. After being allowed to cool, the bottles are filled with the milk, the mouths closed with clean, absorbent cotton and the bottles placed in the wire holder are set in a kettle of water, so filled that the water in the kettle is but little below the level of the milk in the bottles; then the water in the kettle is brought to the boiling point and kept at this temperature for fifteen minutes; then the wire holder with the bottles is kept in an ice chest until one of the bottles is needed to feed the child. This bottle is warmed by holding it a few minutes in lukewarm water, then the cotton is removed and a rubber nipple drawn over the mouth of the bottle. Nipples with long rubber tubes attached should **never** be used. It is impossible to cleanse them, and they have undoubtedly caused the death of many children. The nipples when not in use should be kept in a clean glass jar containing lime water, and each nipple should be dipped in boiling water just before it is attached to the nursing bottle. When the child has taken its food from a bottle, any milk remaining in the bottle should be thrown away and the bottle boiled before it is again filled with milk. Enough bottles should be prepared each morning to last the child for twenty-four hours, one bottle for each feeding; any milk left over at the end of the twenty-four hours should be thrown away.

**Remember:**—(1) That a milk which has already become bad cannot by any means be rendered a fit food for infants. (2) That after sterilization the milk must be kept on ice at a temperature not above 50° F. until needed by the child. (3) That tube nipples must not be used under any circumstances and that the nipples must be kept clean and each one dipped in boiling water before it is used. The fingers with which the nipple is handled must be clean.

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Warren. ....	Dr. Jas. Stewart.
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Webster. ....	Dr. J. E. Hampton.
Worth. ....	Dr. T. J. Smith.
Wright. ....	Dr. A. J. Farmer.

If any of the above positions have been filled by new appointees, please notify the Secretary in order that we may make the necessary corrections.

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The State Board of Health will hold an examination in St. Louis, Mo., September 19th, 20th and 21st, 1904. All those desiring to take the examination will have an opportunity of doing so on the above dates. Information may be had by addressing the Secretary. The exact place of holding the meeting in the above named city will be announced in the next issue of the Bulletin.

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The following named applicants appeared before the State Board of Health on the 20th, 21st and 22d of June in Kansas City, Mo., and took the examination:

Ben F. Harris,	Harry M. Hosmer,
Duff M. Hodges,	A. M. Moore,
George C. Bush,	C. E. Enlow,
Nelle B. Clark,	Theo. F. Fienup,
R. W. Holbrook,	R. E. Dunlap,
L. C. Bauman,	M. B. Hendrix,
I. E. Graham,	L. B. Hall,
J. D. Newman,	L. O. Mason.
D. M. Riggins,	M. L. Alexander,
O. W. Looker,	A. R. Timmerman,
Harry C. Many,	R. W. Mullen,
W. L. Hollister,	Chas. A. Gibbs.